



CREATE  
Shared  
Value

Us  
For &  
All

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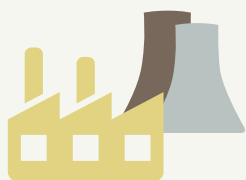
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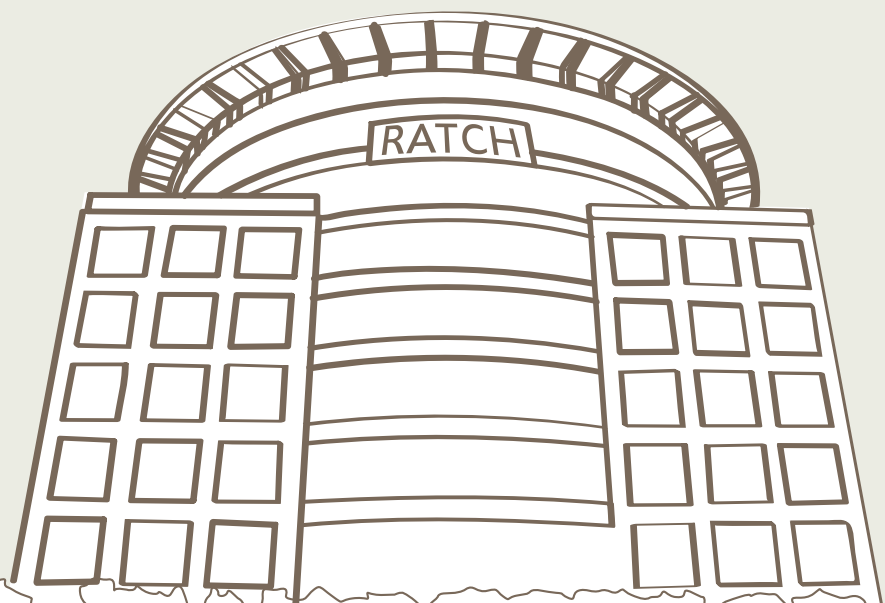
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# RATCH GROUP

Ratchaburi Electricity Generating Holding  
Public Company Limited

Founded on 7 March 2000, the company is the leading Independent Power Producer in Thailand, with 14% of the national installed capacity thus helping enhance the power security of the country. The Electricity Generating Authority of Thailand (EGAT) is its major shareholder with 45% equity stake.

With issued and paid-up capital of THB14.5 billion baht, the company is a listed company and its securities registered in the Stock Exchange of Thailand is under the trading symbol of “RATCH”. Its head office is located at 8/8 Moo 2, Ngam Wong Wan Road, Bangkhen, Muang, Nonthaburi, 11000

Driving Sustainable Growth  
to be a Leading  
Value-Oriented Integrated Energy Company  
in Asia-Pacific



CEO

## Message

### Dear shareholders and stakeholders,

This year Ratchaburi Electricity Generating Holding PCL. continued its strides toward corporate growth on the basis of sustainable development with a focus on morality, ethics, and responsibility to all stakeholders, society, and the environment. Our long-term goal is to integrate energy businesses (domestic and abroad) and establish an enterprise value of 282 billion baht (1.3 time up from this year) or an equivalent of 9,700 MW in capacity by 2023.

As Thailand's major independent power producer, with 14% of the national installed capacity, however, we are responsible for the security and stability of the domestic power systems, which will in turn propel the development and improve the quality of life for members of society.

We have defined our strategic plan to guide our businesses toward enterprise value addition and support to domestic power security for the short, intermediate, and long terms. This plan was seriously implemented this year to steer our business focuses from the domestic market to upstream, midstream, and downstream energy businesses in Asia-Pacific. We are confident that this approach will help us overcome obstacles that may stunt our future growth and affect the corporate sustainability. According to Thailand's power demand forecast for the next decade, the public sector's power purchase from IPPs will be seen only slightly. We therefore turn our focus abroad to overcome such uncertainty arising from the above-mentioned predicament, while adding investment opportunities, particularly those in ASEAN member countries, which are coordinating their cooperation in view of the upcoming ASEAN Economic Community (AEC). All this is bound to favor business expansion and benefits our sustainability.

With 121 billion baht as a corporate growth goal this year, we have achieved the growth of 120.244 billion baht, accounting for 99.38% of the goal as a result of efficient asset quality and financial cost management. A 117-MW cogeneration power plant was commercially operated this year and three power plants represent new investment, namely a 100-MW cogeneration SPP in Thailand and two solar farms in Japan, with a combined capacity of 33 MW.

For economic outcomes, the total revenue reached 58.7 billion baht, increasing by 13.6% over year, divided into 53.556 billion baht from IPPs and SPPs in Thailand (accounting for 91% of the total revenue), 539 million baht from the domestic renewable project (1% of the total revenue), 3.402 billion baht from international project (6% of the total revenue) and 1.203 billion baht from related

business (2% of the total revenue). Profit before interest and income tax expenses amounted to 8.928 billion baht and the profit for the year was reported at 6.279 billion baht. Moreover, the total tax remission to the State and local administration was 1.631 billion baht, with capital for supporting community development of more than 317 million baht.

In supporting Thailand's power stability, our plants with total installed capacity of 5,566 MW focus on plant efficiency management for power availability. This year a total of 25.2 million MW-hours of electricity, or 14.24% of the total domestic consumption, was generated and transferred by the company into the grid system. One finds that the average efficiency index and reliability factor of three power plants are meet the estimates of 80% which is regarded as acceptable level.

This year the company faced a supply shortage of natural gas from Myanmar, which is the primary fuel of three power plants, namely Ratchaburi, Ratchaburi Power, and Tri Energy, with a combined installed capacity of 5,754 MW, causing from their four shut down including the regular maintenance plan. All three represent power generation sources supporting power security in the Central Region and the South. To ease the situation, we managed the fueling efficiency of all plants: for the thermal power plant to be prepared for bunker oil usage, and for the combined-cycle power plant to be prepared for diesel usage. We also reserved fuels for contingencies in case the National Control Center of EGAT needs them. At the same time, we postponed our planned plant maintenance shutdown during the critical period. As a result of all these moves, Thailand's electricity system proved stable enough for the economy and the public to stay intact.

Fully recognizing the environmental concerns of our neighboring communities when we need to fuel power generation with liquid fuels during such a period, we kept a close watch on the efficiency of environmental quality management, notably the FGD efficiency in the thermal power plant, which achieved 97.3% efficiency. Officers of both plants also fostered an understanding among the

communities by alerting them of the plans to use liquid fuels and the appearances of smoke resulting from their combustion. Further, the measured values of pollutants during such periods were found to be within the limits required by law, and the communities expressed due appreciation of our situation and the necessity.

Global climate change is a risk challenging the company's future growth and sustainability, most likely leading to the shortages of water (a vital factor for power generation); flooding affecting power generation; various countries' enforcement of laws, regulations, and taxation to set goals for greenhouse gas emissions under the obligations of the Kyoto Protocol; and public resistance to coal-fired power plants. The company's twin management approaches of such risks consist of, first, increasing the goals under renewable energy projects with an emphasis on solar power, wind energy, biomass, and refuse derived fuel, and second, setting goals for greater reduction of greenhouse gas volumes in managing and preserving forest areas as carbon dioxide trapping sources.

Under the renewable energy project, today the company commands a total of 143.45 MW of capacity, equivalent to 226,029 tons of carbon dioxide reduction a year. We will invest more in such projects to raise this capacity to 500 MW by 2017. This year we reduced carbon dioxide for the Ratchaburi Power Plant and Head Office by 12,580 tons, resulting from 21,642 MW of efficiency improvement and power-saving. In preserving forest areas to trap the gas, this year the company sponsored 132 community forests totaling 137,749 rai of land, equivalent to 275,498 tons of trapped carbon dioxide.

In running our businesses, we have remained committed to good corporate governance. All our activities must be based on morality, ethics, integrity, and responsibility. This year we declared our intention to join the Thailand Private Sector Collective Action Coalition against Corruption (CAC), recognizing that corruption not only poses obstacles and threats to our sustainability, but also harms the economy and society in the long term. Our stewardship of neighboring communities is ongoing.

Besides controlling and preventing impacts of our businesses, we supported and promoted the quality of lives in various ways. This year our power plants, consisting of the company's plant, Tri Energy Power Plant, Ratchaburi Power Company's Power Plant, Ratchaburi World Cogeneration, and renewable energy power plant sponsored over 226 million baht going to the Power Plant Development Fund.

As for our stewardship of employees, our most precious resources, this year we focused on work safety, occupational health, and work environment, setting goals of zero accident at all sites, including Head Office. To cultivate employees' awareness that accidents are preventable if they are serious about them and cultivate work safety habits, we staged training and assorted activities at Head Office and our group's power plants. To extend our efforts, we ensured that business partners, community residents, and external parties that entered our office or power plants must observe our goals. This year our Head Office, Ratchaburi Power Plant and Ratchaburi-Power successfully accomplished zero-accident target, since no employee, contractor employee, or subcontractor employee was injured while working there.

### Looking ahead

We will continue to dedicate manpower and resources to drive our strategic plans toward our goal: To be a leading value-oriented integrated energy company in Asia-Pacific. Next year, our goal for enterprise value is 133 billion baht. Our new strategic plan approach will be retained: Focus on investment expansion for major core fuel project and renewable-energy projects abroad;

prepare for a new domestic IPP bidding round; establish a downstream business platform; extend cooperation with partners and seek new partners to grow business abroad; squeeze efficiency out of the quality of assets and finance; upgrade personnel caliber so that they may become smart and noble; and promote a corporate culture that is deep-rooted in good governance. As for the anti-corruption aspect, we are upgrading our preventive and audit systems to meet international standards and plan to undergo assessment by CAC within two years.

One of our major missions is to administer climate change. This task will accompany corporate growth; management of greenhouse gases through capacity increase associated with renewable energy; and reduction of carbon dioxide emission (direct and indirect). Improvement of activities and goals in line with the public sector and international practices will be our norm. Next year, Ratchaburi Power Plant plans to join a pilot project of Thailand Voluntary Emission Trading Scheme, organized by the Thailand Greenhouse Gas Management Organization (Public Organization).

Over the past 15 years, Ratchaburi Electricity Generating Holding PCL. has been confident in its full commitment and responsibility to all parties. We have relentlessly addressed communities' needs while exerting our stewardship of the environment, for these approaches would lead us toward genuine sustainability. On behalf of the Board, executives, and employees, I sincerely wish to thank all sectors for their excellent support to and encouragement of the company's growth and security.

Sincerely yours,



Mr. Pongdith Potchana  
Chief Executive Officer

# About This Report

## Reporting Approach <sup>(G4-18)</sup>

This 2014 edition of the sustainability report of Ratchaburi Electricity Generating Holding PCL. (“the company”) publicizes the policies, strategies, operating approach, and performance for its key economic, social, and environmental sustainability for its stakeholders. Spanning business performance from January 1 to December 31, 2014, this issue is the second report, prepared under the Global Reporting Initiative (GRI) guidelines version 4.0 (G4).

## Quality and Credibility Control

Taking into account the principles for defining contents under GRI, the report-developing process ensures stakeholder inclusiveness, sustainability context, and importance to the company as well as its stakeholders. It establishes a procedure for data verification and alignment by data-supplying and corporate units. The disclosed data in this report have been approved by senior executives.

For more information, please contact  
Sustainability Development Department  
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## Report Scope <sup>(G4-17, G4-23)</sup>

The 2014 Sustainability Report’s scope is extended from the 2013 report’s scope only covering the company and subsidiaries where it holds 99% stakes. That is to say, this report’s scope covers the company, subsidiaries, joint venture companies and those where it holds at least 25%, as listed below. Meanwhile, the environment and safety-related performance of the company, and domestic subsidiaries is also disclosed in this report. A comprehensive list of companies under the company’s operation is found in this year’s annual report.

- Ratchaburi Electricity Generating Holding PCL.
- Ratchaburi Electricity Generating Co., Ltd. (99.99% shares) operating 3,645-MW Ratchaburi Power Plant and 700-MW Tri Energy Power Plant
- Ratchaburi Energy Co., Ltd. (99.99% shares) operating domestic renewable energy business, associated gas-fired Pratu Tao-A and Sao Thain-A Power Plants, with 6.25 MW in capacity
- RATCH-Lao Services Co., Ltd. (99.99% shares)
- RATCH-Australia Corporation Ltd. (80% shares by a subsidiary) operating three natural gas-fired power plants and three wind farms, with combined capacity of 719.5 MW
- Ratchaburi World Cogeneration Co., Ltd. (40% shares by a subsidiary) operating 234-MW Ratchaburi Cogeneration Power Plant
- Ratchaburi Power Co., Ltd. (25% shares by subsidiary) operating 1,400-MW Ratchaburi Power Plant
- Nam Ngum 2 Power Co., Ltd. (25% shares by a joint venture entity) operating 615-MW Nam Ngum 2 Power Plant, located in Lao PDR

## Determination of Contents <sup>(G4-18, G4-22)</sup>

This report aligns with the approach taken by GRI G4 (Core Level) and the methods to evaluate the calculation and hypothesis used for estimate data will be presented in the topic relating to the said data, without repeating data of last year. Details about indicators of key aspects shown in the GRI Content Index, page 94-98. Here is the procedure for the determination of contents:

**Step 1: Identification** (G4-18, G4-25)

Identify key sustainability aspects to business strategies or aspects of value to stakeholders, while reviewing the sustainability aspects of the power industry.

The company groups stakeholders by reviewing their relevance to its mission, goals, strategies, and values, as well as those affected positively and negatively by its business, and those interested in its business operation, into 11 groups, with its own process for forging engagement and echoing each group's expectations:

(G4-24, G4-26, G4-27)

Stakeholder	Expectation	Participation channel	Example of how expectation is addressed
<b>Electricity Generating Authority of Thailand (EGAT)</b>	<ul style="list-style-type: none"> <li>💡 Attractive dividends</li> <li>💡 Strategies agreeing with those EGAT, with cooperation for enhanced competitiveness</li> <li>💡 Power generation meeting contractual volumes and quality</li> </ul>	<ul style="list-style-type: none"> <li>💡 Meetings &amp; consultations via various meetings, including EGAT Business Committee, Board meetings and joint business management group meetings</li> <li>💡 Formal &amp; informal activities</li> </ul>	Determination of business strategies in line with EGAT's targets, including coordination and cooperation to share information
<b>Shareholders &amp; investors</b>	<ul style="list-style-type: none"> <li>💡 Cost-effective returns</li> <li>💡 Fair and transparent business with adequate and timely disclosure of information</li> <li>💡 Value-adding business growth</li> </ul>	<ul style="list-style-type: none"> <li>💡 Shareholders' &amp; analysts' meetings</li> <li>💡 Company visits &amp; investors' visits for information-sharing</li> <li>💡 Company website</li> <li>💡 Company Secretary Office &amp; Investor Relations</li> </ul>	Shareholders' meetings provide arenas for shareholders' queries and comments; information disclosure is available in annual report and sustainability report. Also, other communication channels, such as website, other publicity, etc., have been added.
<b>Creditors</b>	<ul style="list-style-type: none"> <li>💡 Financial discipline &amp; debt coverage</li> <li>💡 Compliance with law</li> <li>💡 Fair and transparent business conduct</li> </ul>	<ul style="list-style-type: none"> <li>💡 Information-sharing meetings &amp; get-togethers to forge close ties</li> </ul>	Debt repayment plans are strictly observed so as to ensure creditors, and corporate ratings are provided by domestic and international institutions, namely TRIS Ratings, S&P Ratings & Moody's.
<b>Joint-venture partners &amp; business partners</b>	<ul style="list-style-type: none"> <li>💡 Business acumen of personnel and coordinated benefits based on each company's strengths</li> <li>💡 Fair and transparent business conduct</li> <li>💡 Company's goodwill</li> <li>💡 Strong financial status</li> </ul>	<ul style="list-style-type: none"> <li>💡 Formal &amp; informal meetings</li> <li>💡 Company visits</li> <li>💡 Win-win joint-venture negotiations</li> </ul>	The company values risk management and recruits dedicated & professional personnel. It discloses information through various channels.



(G4-24, G4-26, G4-27)

Stakeholder	Expectation	Participation channel	Example of how expectation is addressed
<b>Regulators, licensors, and Stock Exchange of Thailand (SET)</b>	<ul style="list-style-type: none"> <li>💡 Compliance with laws &amp; regulations</li> <li>💡 Environmental quality management &amp; community stewardship</li> <li>💡 Fair and transparent business conduct</li> <li>💡 Complete and timely disclosure of information</li> </ul>	<ul style="list-style-type: none"> <li>💡 Formal &amp; informal meetings and consultation</li> <li>💡 Company visits</li> </ul>	Changes in legislation, regulations & requirements are regularly monitored for compliance. Crisis management plans are revised and drilled annually. Report/data submission is completed and meets requirements.
<b>Business partners &amp; contractors</b>	<ul style="list-style-type: none"> <li>💡 Good business partnership &amp; long-term relationship</li> <li>💡 Fair and transparent business conduct</li> <li>💡 Robust financial standing</li> <li>💡 Goodwill</li> </ul>	<ul style="list-style-type: none"> <li>💡 Regular communication with business partners &amp; contractors</li> </ul>	Systematic hiring & procurement marked by international practices for transparency and absence of conflicts of interest, with maximum care for occupational health & safety of contractors & business partners
<b>Employees</b>	<ul style="list-style-type: none"> <li>💡 Attractive pays &amp; welfare on par with business peers</li> <li>💡 Career growth &amp; participation in planning fitting job levels &amp; responsibilities</li> <li>💡 Grooming of potentials</li> <li>💡 Decent work environment &amp; work safety</li> </ul>	<ul style="list-style-type: none"> <li>💡 Internal communication</li> <li>💡 Comment &amp; complaint-making channels</li> <li>💡 Recreational activities &amp; employee arenas</li> </ul>	<ul style="list-style-type: none"> <li>💡 Revision of pay structures &amp; rates on par with industry</li> <li>💡 Development of succession planning for career growth</li> <li>💡 Development plans to promote capability, develop competences, and develop employees' spiritual well-being</li> <li>💡 Setting of standardized safety, occupational health, and environmental management measures in offices</li> </ul>
<b>Customers &amp; consumers</b>	<ul style="list-style-type: none"> <li>💡 Delivery of contractual volumes of power</li> <li>💡 Environmentally friendly power-generating process without impacting communities</li> <li>💡 Sensible sales prices of power</li> </ul>	<ul style="list-style-type: none"> <li>💡 Information sharing &amp; two-way communication</li> </ul>	Maintenance plans are strictly observed to maintain efficiency of power-transmitting availability. Annually revised & drilled emergency plans are in place. Managed use of spare parts and fuels as part of production cost reduction.

(G4-24, G4-26, G4-27)

Stakeholder	Expectation	Participation channel	Example of how expectation is addressed
<b>Communities around sites</b>	<ul style="list-style-type: none"> <li>💡 Responsible operation without negative impacts on communities &amp; environment</li> <li>💡 Care for &amp; promotion of community well-being</li> <li>💡 Participation with communities &amp; open-mindedness</li> </ul>	<ul style="list-style-type: none"> <li>💡 Power plant visits</li> <li>💡 Community development activities</li> <li>💡 Two-way communication &amp; community calls</li> </ul>	Corporate Relations Division serves as core channel for establishing community relations, equipped with diverse forms of communication, including newsletters, news alerts & meetings/calls on various occasions. The company also participates in Power Development Fund Committee, designed to maximize community benefits. It also values community participation in auditing power plants' environmental management.
<b>Mass media</b>	<ul style="list-style-type: none"> <li>💡 Accurate, adequate, timely, thorough &amp; equal disclosure of information</li> <li>💡 Two-way communication with senior executives</li> </ul>	<ul style="list-style-type: none"> <li>💡 Press conferences</li> <li>💡 Interviews</li> <li>💡 Company website</li> <li>💡 Company visits</li> <li>💡 Occasional meetings</li> <li>💡 Relationship building activities</li> </ul>	Responsible parties are assigned to disclose the company's information. Communication & PR plans are in place for data & news. Two-way & one-way communication has been made continuously & regularly.
<b>Society</b>	<ul style="list-style-type: none"> <li>💡 Socially &amp; environmentally friendly operation, with participation in global warming reduction</li> </ul>	<ul style="list-style-type: none"> <li>💡 Social service activities &amp; assorted campaigns</li> </ul>	Campaigns on energy-saving & community energy development. Determination of indicators for CO <sub>2</sub> reduction in the company's strategic plans. Social activities focus on conservation & growth in forest acreage nationwide.

**Step 2: Prioritization** <sup>(G4-18)</sup>

The company has to prioritize aspects with due regard for effects on stakeholders' assessment and decision-making together with economic, social, and environmental significance to its business. Corporate units and data-supplying units are also responsible for reviewing and prioritizing such aspects.

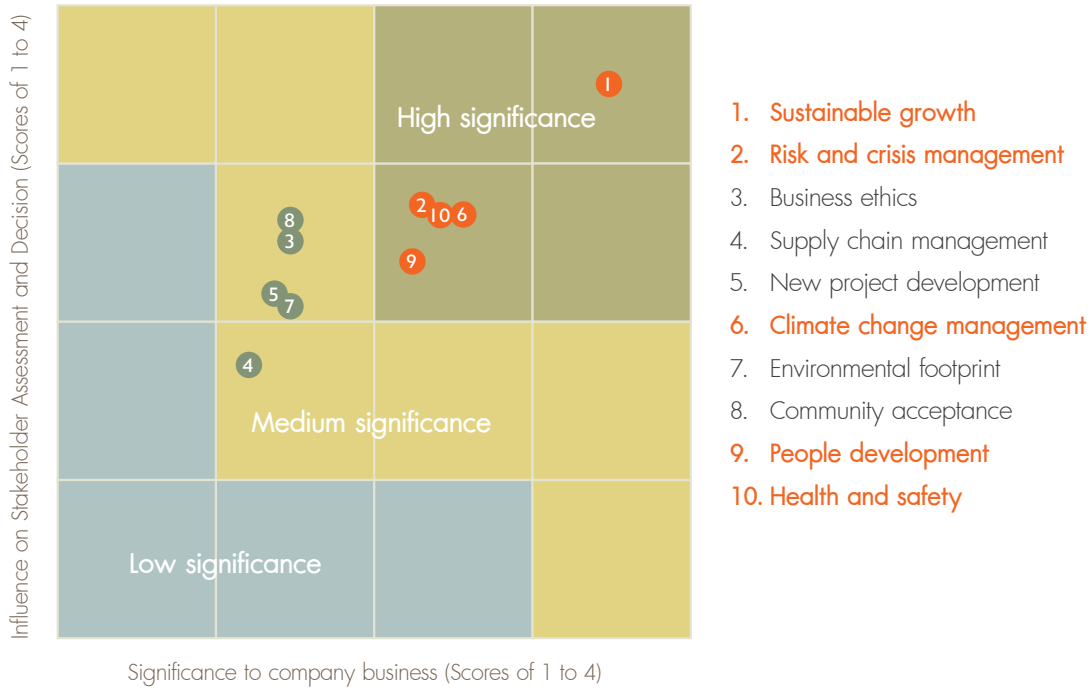
**Step 3: Validation** <sup>(G4-18)</sup>

Corporate units preparing the report are in charge of aspect validation to ensure the completeness in line with the principles of report quality identification.

**Step 4: Review** <sup>(G4-18)</sup>

Stakeholder interviews take place after this report's publicity so that their views may be applied to content revision for subsequent editions to address aspects of stakeholders' expectations and interest.

### Assessment Outcomes of Key Aspects of Sustainability <sup>(G4-19)</sup>



### Materiality Aspect in the Sustainability Report <sup>(G4-19)</sup>

Chapter	Materiality Aspects	GRI Aspect	Topic in the report	Impact Boundary				
				Internal <sup>(G4-20)</sup>				External <sup>(G4-21)</sup>
				IPPs and SPPs in Thailand	Renewable Projects in Thailand	International Projects	Related Business	Community, Customer, Supplier, Business Partner and EGAT
Our Business	3 Business Ethics	- Governance*, Ethics and Integrity* - Anti-corruption	- Board structure transparency - Anti-bribery and corruption - Grievance mechanism	x	x	x	x	EGAT Business Alliance Partners and Consumers
Managing Economic Performance	1 Sustainability Growth	- Economic performance - Availability and - Reliability - System Efficiency	- Expansion in existing countries - Expansion in new countries (AEC, APAC) - Expansion through organic growth, M&As, JV - Strategic change from power company to energy company	x	x	x	x	EGAT and Business Alliance
	2 Risk & Crisis Management		- Structure and process - Managing risk & crisis	x	x	x	x	Communities

Chapter	Materiality Aspects	GRI Aspect	Topic in the report	Impact Boundary				
				Internal (G4-20)		External (G4-21)		
Our People	9 People Development	- Employment - Training and education - Diversity and equal opportunity - Equal remuneration for women and men	- Talents attraction and retention - Human capital development - Labor rights compliance	x	x	x	x	
	10 Health & Safety	- Occupational health and safety	- Zero-accident target - Employee health	x				Trade Partners and Customers
Our Environmental Responsibility	6 Climate Change	- Emissions - Energy	- Improving operational efficiency - Green office - Carbon offset - GHG target - Adaptation strategy	x	x	x		Trade Partners and Customers
	7 Environmental Footprint	- Water - Effluent and waste	- Water management - Air emission and waste management	x				Communities
	5 New Project Development	- Environmental compliance	- EIA compliance with lenders' standards	x	x	x	x	Communities
Our Partners	8 Community acceptance	- Local communities - Stakeholder engagement - Indirect Economic Impacts	- Improving surrounding communities' quality of life - Effective community engagement - Community risk assessment	x	x	x		Communities
	4 Supply chain management	- Procurement practices	- Tendering procedure - ESG integration into supply chain process	x	x	x	x	Trade Partners and EGAT

\*GRI Aspect disclosed (General Standard Disclosure Aspects)

In the report ● refers to high significant aspects  
● refers to medium significant aspects

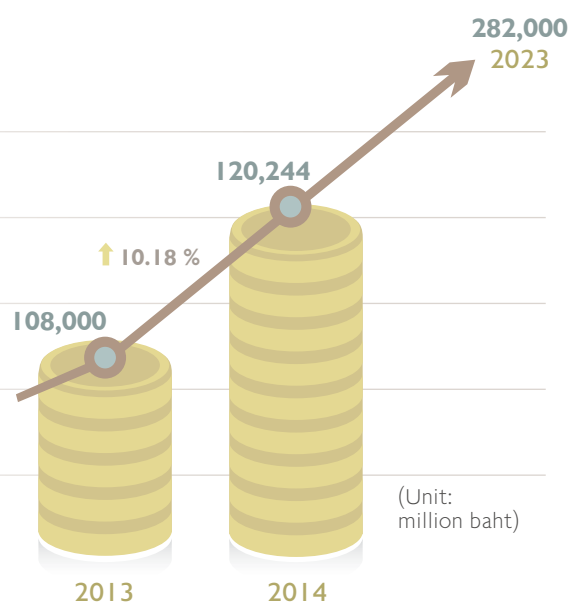


## About RATCH

- ✓ Driving corporate growth.
- ✓ Maintain corporate governance.
- ✓ Develop anti-corruption system to meet international standard.

## Key Performance for 2014

Enterprise Value Growth

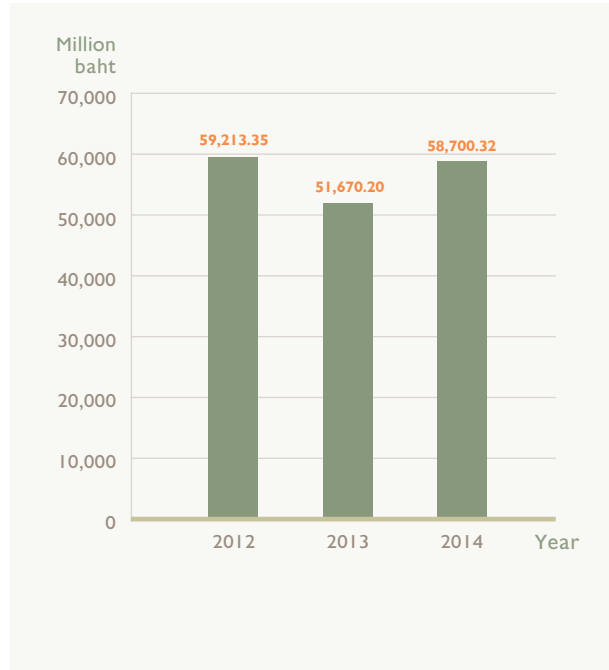


● Enterprise Value

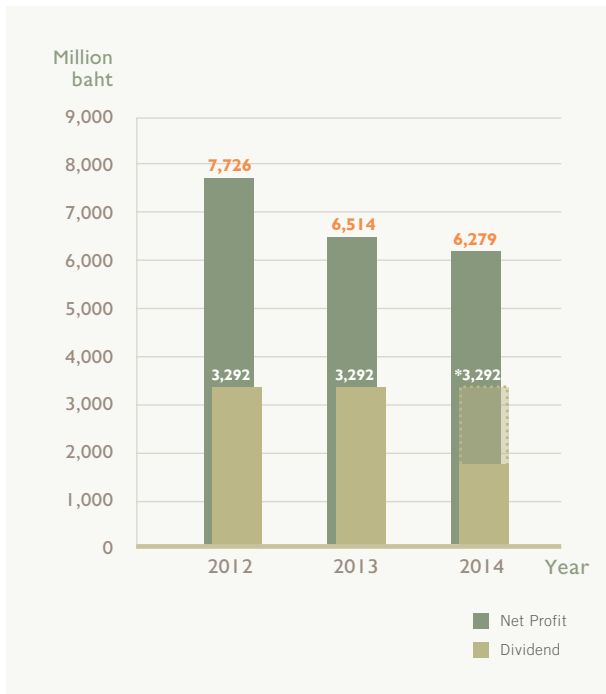
Growth in Equity Capacity



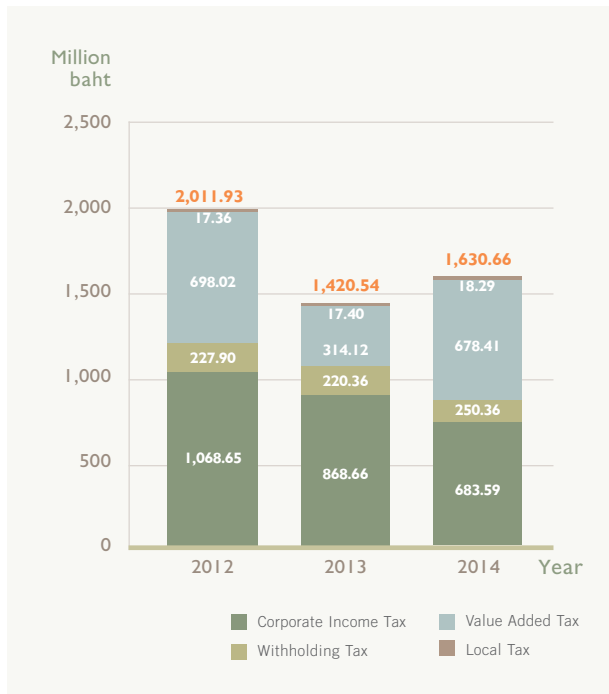
Total Revenue



Net Profit and Dividend



Tax



The Board of Director’s resolutions, dated February 24, 2015, approved the dividend payment for the half of 2014 totalling 1,696.5 million baht. The resolution will be proposed the shareholder’s meeting for approval on April 10, 2015

<b>Vision</b>	To be a leading value-oriented integrated energy company in Asia-Pacific
<b>Mission</b>	<ul style="list-style-type: none"> <li>✓ To ensure shareholders' value creation by continuously generating superior financial returns</li> <li>✓ To achieve world-class operational excellence and project development</li> <li>✓ To be socially and environmentally responsible, conducting businesses in a fair manner</li> <li>✓ To provide an enjoyable, secure, and motivating work environment</li> <li>✓ To support long-term national energy security and comply with all laws and applicable regulations</li> </ul>
<b>Goals &amp; Strategies</b>	The company's operation in this year was based on operational strategic frameworks for growing its enterprise value to 121 billion baht for 2014 under a goal to achieve the enterprise value of 282 billion, equivalent to 9,700 MW in capacity by 2023.

### Goal for 2023

**282 billion baht in enterprise value**  
**9,700 MW capacity equivalent**

### Growth strategies, 2013-2023

<b>Maximize current asset management</b>	<b>Focus on new power plant development projects in existing markets</b>	<b>Seek partners to grow investment in the power business in emerging markets</b>	<b>Supplement value by growing investment to downstream businesses</b>
<b>Current assets</b> Current assets Maximize operating efficiency and optimize value	<b>Thailand</b> Focus on investment as a major shareholder in new projects with PPAs with EGAT in Thailand and neighboring countries	<b>ASEAN</b> Focus on joint investment with promising business partners to grow investment in other ASEAN countries	<b>Supply fuels</b> Enter the fuel supply business for power generation by seeking investment opportunities with business partners
<b>Optimize current assets</b>	<b>Australia</b> Focus on renewable energy projects	<b>Other Asian countries</b> Promising projects	<b>Power transmission lines and distribution</b>

Strengthen organization's internal competencies

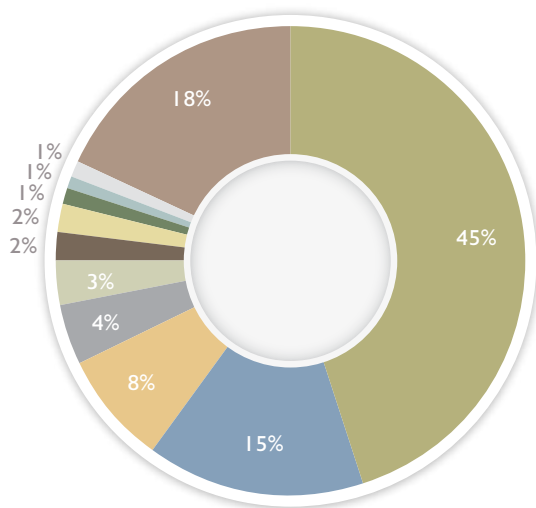
## Business overview

Formed on March 7, 2000, with a registered capital of 14.5 billion baht, Ratchaburi Electricity Generating Holding PCL. is listed on the Stock Exchange of Thailand with “RATCH” as the securities trading symbol. In 2014, the company’s employee headcount was 366 of whom were serving in Thailand, Lao PDR and Australia. The head office is located at 8/8 Ngam Wong Wan Road, Tambon Bang Khen, Amphoe Mueang, Nonthaburi 11000.

One of Thailand’s leading private power producers with a dominant role in promoting national power security-as an essential public utility to promote national economic growth and society’s wellbeing-the company commands a combined equity capacity of about 5,959 MW, or 14% of the capacity of Thailand. It aspires to be a leading value-oriented integrated energy company in Asia-Pacific for the benefit of business security.

## Shareholding Structure

As a public company limited, the company has Electricity Generating Authority of Thailand (EGAT) as the major shareholder with about 45% of all common shares. The top ten shareholders, as of October 31, 2014, are as follows.



Shareholders	Number of Share
1. Electricity Generating Authority of Thailand	652,500,000
2. Thai NVDR Company Limited	216,577,285
3. Littledown Nominees Limited	113,098,000
4. Social Security Office (Grouped)	63,617,100
5. AIA Company Limited (Grouped)	48,025,600
6. State Street Bank and Trust Company (Grouped)	32,248,534
7. Krungsri Assest Management Company Limited (Grouped)	24,258,700
8. HSBC (Grouped)	19,539,392
9. Thai Life Insurance Public Company Limited	10,594,200
10. Mr. Min Thianworn	10,248,800
<b>Total</b>	<b>1,190,707,611</b>
<b>Other Shareholders</b>	<b>259,292,389</b>
<b>Total Shareholders</b>	<b>1,450,000,000</b>

## Our business

The company’s business is conducted through a holding company engaged mainly in the power generation and related energy businesses in and outside Thailand. In 2014, it held 50% or more shares in 14 subsidiaries and held shares in 22 jointly controlled businesses and joint-venture companies (with less than 50% shares). More details appear in the Annual Report 2014.

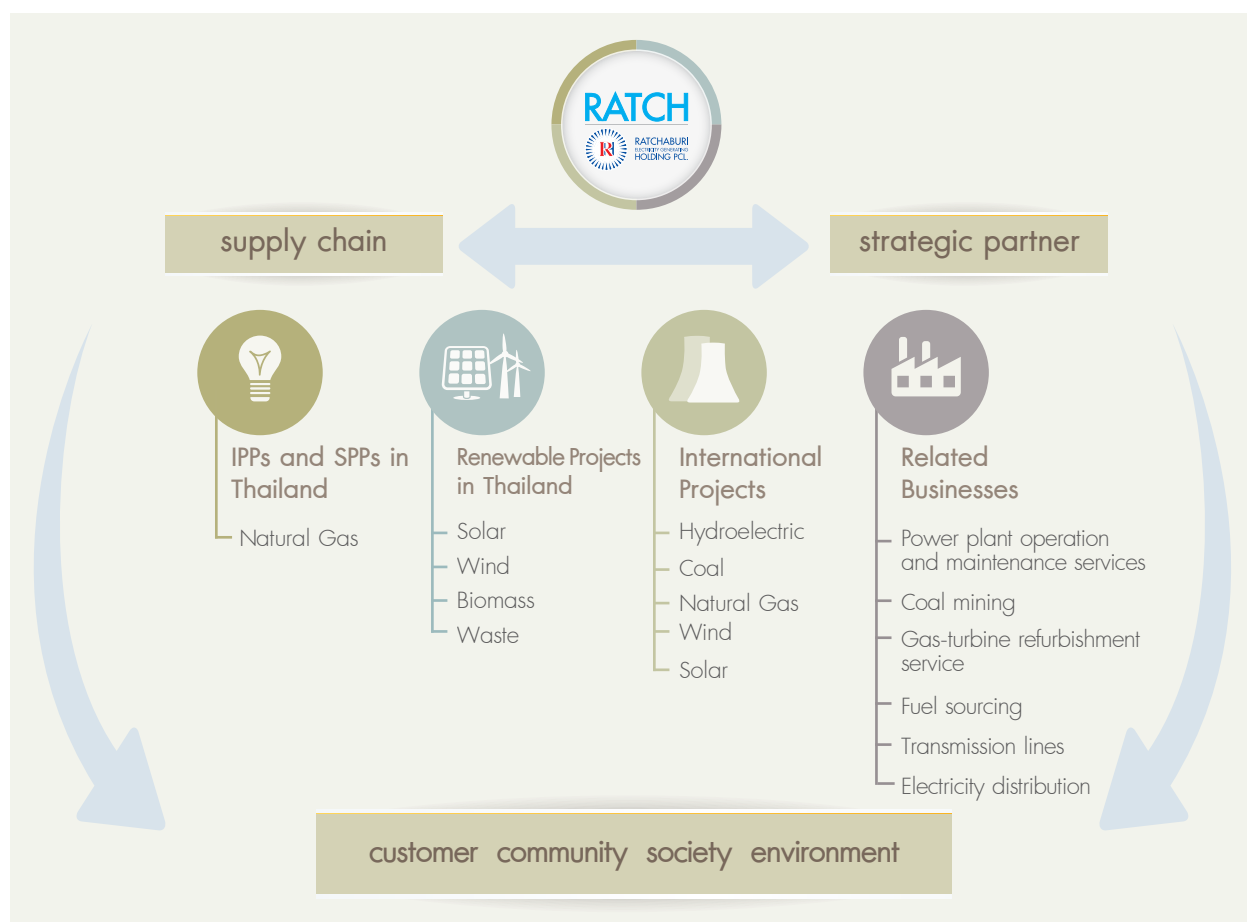
The company’s main revenue included dividend from subsidiary and profit sharing from jointly-controlled entities.

In 2014, the company’s total revenue reached 58.7 billion baht, divided into 53.556 billion baht from IPPs and SPPs in Thailand (representing 91% of the total revenue), 539 million baht from the domestic renewable project (1% of the total revenue), 3.402 billion baht from international project (6% of the total revenue) and 1.203 billion baht from related business (2% of the total revenue). As of December 31, 2014, the company recorded the total assets of 96.235 billion baht, total liability of 35.036 billion baht and shareholders’ equity of 61.199 billion baht. .



## Business structure

The company focuses on power generation and related businesses, based on fossil fuels and renewable energy in and outside Thailand, mainly to support domestic power system security, while seeking opportunities to grow and supplement business value in a sustainable way. In 2014, the company structured its businesses in line with its strategic plans through four groups:



**1. IPPs and SPPs in Thailand:** The company particularly values investment in fossil fuel-based power plants, since these account for the bulk of power plants that satisfy domestic power system security. This is one of the company's core missions as Thailand's leading independent power producer (IPP). The company invests in IPPs and small power producers (SPPs), fueled mostly by natural gas and petroleum products. Its six projects command a total equity capacity of 4,876.40 MW.

**2. Renewable Projects in Thailand:** To fulfill the public policy of promoting renewable energy development for national energy security and underscore its intention for natural resource conservation, the company recognizes and focuses on investment in domestic renewable-energy power projects, particularly solar energy, wind energy, biomass energy, refuse derived fuel, and the associated gas. Through these projects, the company strives to maintain natural equilibrium and energy sustainability in all aspects by investing in 16 domestic renewable-energy projects with the equity capacity of 75.59 MW.

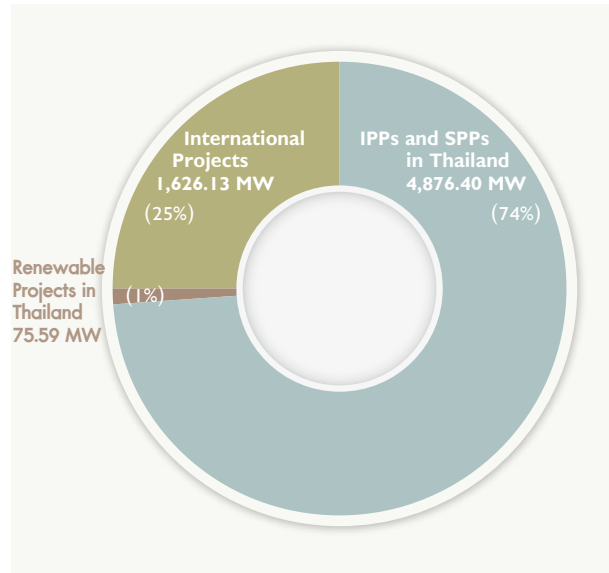
**3. International Projects:** RATCH puts more focus to establish power plants abroad in order to enhance its enterprise value to 282 billion baht or equivalent to 9,700 MW in capacity by 2023 as per its long-term goal. Today the company is focusing on Asia-Pacific investment. In 2014 its investment platforms are Lao PDR, Australia, and Japan. Eleven of these projects are hydropower plants and power plants fueled by natural gas, coal, wind energy, and solar energy. Another eleven projects feature investment through EDL-Generation Public Company (EDL-GEN), an indirect investment through Lao PDR’s stock exchange.

**4. Related businesses:** Under the company’s revised vision (To be a leading value-oriented integrated energy company in Asia-Pacific), the Related Businesses Group represents efforts to grow the investment scope to integrated energy business, from upstream to downstream. Through investment search in and outside Thailand, the company’s goal is to enter the fuel-supply business for power generation and the business of power transmission line and distribution. It has invested in power plant operation and maintenance, gas turbine refurbishment, coal mining for power generation, and biomass supply for biomass power plants.

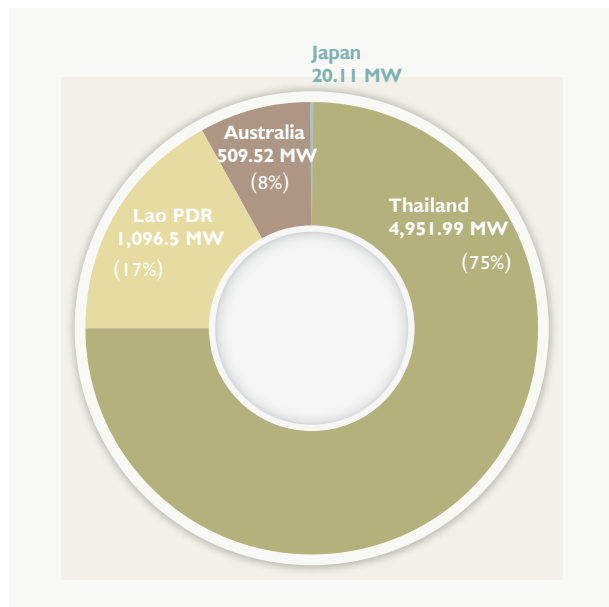
### Investment platforms

In 2014, the company successfully invested in a renewable-energy business in Japan, expanding its output base from Lao PDR and Australia. Under its 10-year strategic plan (2014-2023), the company defines international investment as a strategy for organizational growth. To this end, the prime goals are neighboring countries like Laos, Myanmar, and Cambodia, for besides acquiring the power output to meet the needs of these countries, this move implies more power transmission to Thailand as another means to promote domestic power security. The company also seeks investment opportunities in ASEAN countries like Vietnam, Indonesia, the Philippines, Malaysia, and other Asia-Pacific countries.

Equity Capacity By Business Structure



Equity Capacity By Investment Platforms

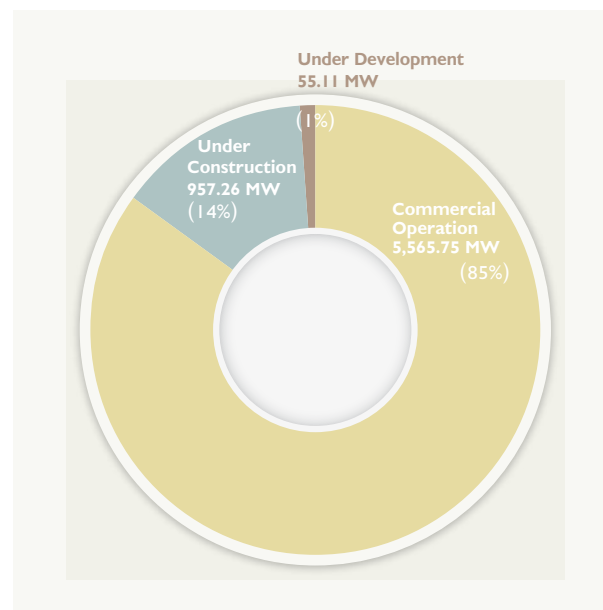


## Core assets

Power plants continue to represent the company's core assets for income generation and growth. In 2014, the company recognizes one small cogeneration power plant commercially operated with an equity capacity of 46.8 MW. In addition, three new projects represent its investment for a combined capacity of 55.11 MW, of which one is a small cogeneration power plant with a capacity of 35 MW, where the company holds 35% shares, and the other two are solar-energy power plants with a equity capacity of 20.11 MW, where the company holds 60% shares.

Today the company has invested in 33 power plant Projects, with 11 projects managed by EDL-GEN in which the company indirectly invests through purchasing securities in Lao PDR's stock exchange. A total equity capacity reaches 6,578.12 MW, of which 5,565.75 MW are commercially operated ones and 1,012.37 MW are other projects under development and construction.

## Power Plant Assets



## Commitment to Good Governance

Bound by its vision of becoming a leading value-oriented integrated company in Asia-Pacific, the company is committed to good governance in business conduct and organizational administration, for it is confident that such approach will lead the company toward sustainable growth and goal achievement. Achievement of these will bring long-term benefit to stakeholders as well as the national economy and society, apart from promoting communities' and society's trust in the company.

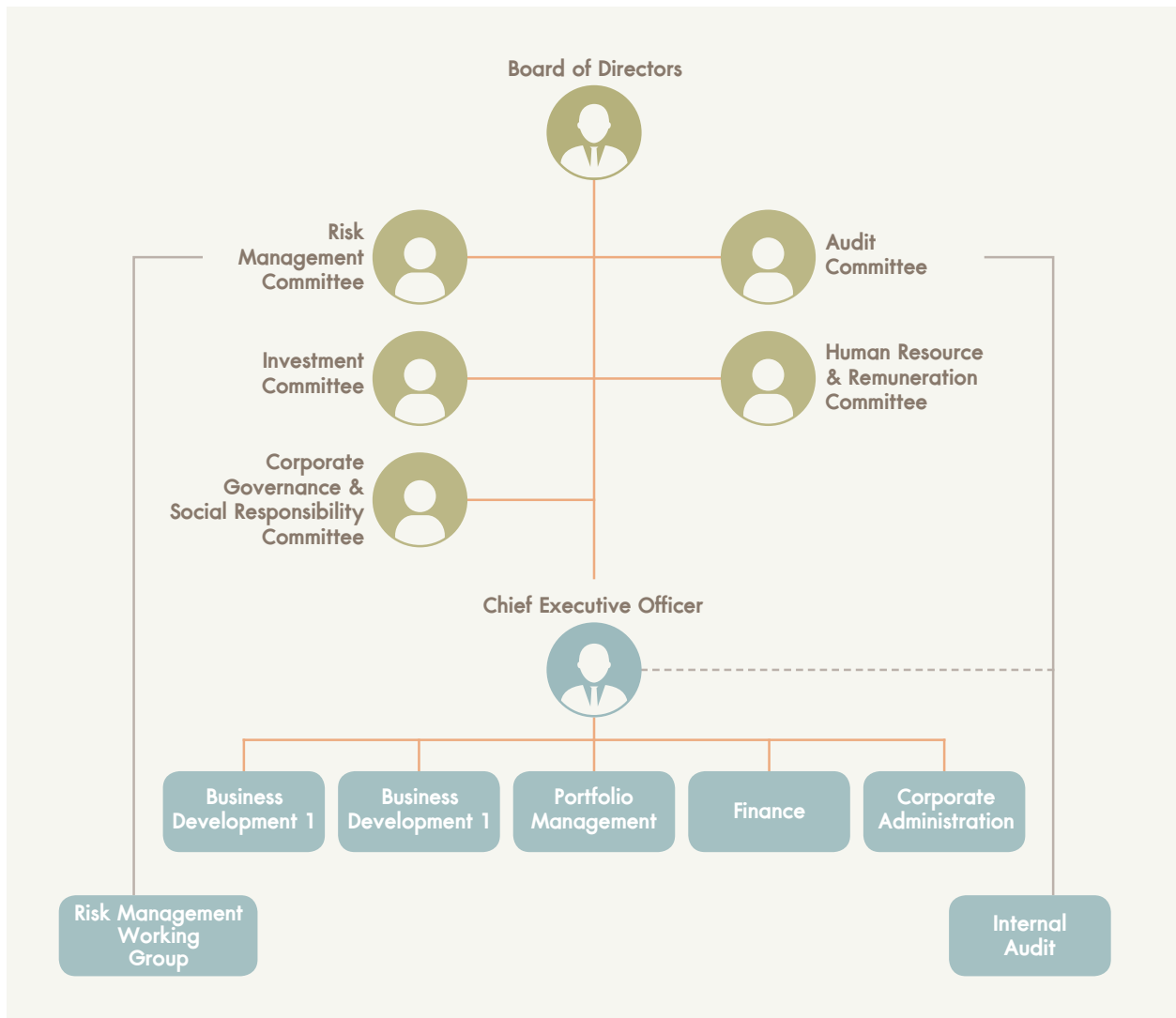
Appointed by the shareholders, the Board of Directors is the company's ultimate leadership, representing the shareholders in decision-making and definition of vision, missions, strategies, various policies, operating goals, and supervision of business. This way, the company can ensure that shareholders' and relevant stakeholders' expectations will be met in an independent and full-fledged way, whether long-term attractive returns, corporate financial

security, robust competitiveness, or earnest stewardship of communities, society, and the environment. The Board also monitors and assesses the performance of the appointed management.

Ever since day one, the Board has laid down a framework for good governance as the approach for corporate administration. Notable elements include the Board structure and sub-committee structures, their roles and responsibilities, directors' qualifications, proportion of independent directors, codes of conduct for the company, executives, and employees, along with the corporate vision, missions, strategies, goals, monitoring, and assessment.

This year the Board framed the performance under the vision, missions, and 10-year strategic plan (2013-2023), approved in 2013, setting the corporate value goal at 282,000 million baht or an equivalent capacity goal of 9,700 MW in 2023.

## Governing Structure



As of year-end 2014, the Board consisted of 15 directors, seven of whom represented the major shareholder (one being a management director) and eight represented independent directors. All directors are experts chosen from various relevant professional disciplines, direct and indirect, related to the company's business. This way the deliberation and decision-making of key matters are prudent and comprehensive, spanning economic, social, and environmental aspects.

The Board groups its tasks, which are then performed by sub-committees supervising key specific tasks for the company to ensure that the company's business can address crucial issues most efficiently and most effectively.

This year it appointed the Corporate Governance and Social Responsibility Committee, thus adding to the five existing sub-committees:

1. Audit Committee (one chair and at least three independent directors)
2. Risk Management Committee (one chair and up to four directors)
3. Investment Committee (one chair and up to three directors)
4. Human Resources & Remuneration Committee (one chair and at least two directors)
5. Corporate Governance & Social Responsibility Committee (one chair and up to three directors).

Each sub-committee has a secretary and an assistant secretary, appointed from executives in charge of relevant tasks or those competent in given matters.

In appointing the Corporate Governance & Social Responsibility Committee, the Board underscores the

company's determination to conduct business with morality, ethics, and comprehensive responsibility to all stakeholders. Such essential element drives the growth of the company in a robust and sustainable way. Below are details about the roles of the Board and sub-committees:

**Table: Composition of the Board and Sub-committees**

Item	Board	Audit Comm.	Risk Management Comm.	Investment Comm.	HR & Remuneration Comm.	Corp. Governance & Social Resp. Comm.
No. of directors & secretary	15	5	4	3	4	4
No. of directors representing shareholders	7	-	1	2	1	1
No. of independent directors	8	4	2	-	2	2
No. of management directors & secretary	1	1	1	1	1	1
No. of female directors & secretary	2	1	-	-	1	1
No. of male directors & secretary	13	4	4	4	3	3
Assistant secretary						
- Male	-	-	1	1	1	-
- Female	-	1	-	-	-	1

Information on role and responsibilities of the board of directors and subcommittees is available on 2014 Annual Report and [www.ratch.co.th](http://www.ratch.co.th).

The Board values business with significant impacts on shareholders and key stakeholders. To date, it has approved goals, strategies, plans, budgets, risk management, investment, financial and capital administration, asset administration, personnel development, stewardship of communities, society, and the environment, as well as pertinent issues related to laws, regulations, and requirements. This year the company held 13 Board meetings and 27 sub-committee meetings to review and monitor its operations. It also organized company and project visits designed to track progress and obstacles,

which would prove helpful to other deliberations and decision-making on other projects.



Item	Board	Audit Comm.	Risk Management Comm.	Investment Comm.	HR & Remuneration Comm.	Corp. Governance & Social Resp. Comm.
Meetings by entire board or subcommittee	13	6	5	6	9	1
Meetings strictly among non-management members	1	1	-	-	-	-
Company visits	2	2	2	2	1	1

Late this year the Board assessed its own annual performances by group and by individual, relying on assessment forms based on the criteria for board assessment following good governance practices of the Stock

Exchange of Thailand (SET). The outcomes would prove helpful to efficient and effective improvement of approaches and processes for corporate governance practices. Below are the outcomes of the entire Board's assessment:

List	Assessment Outcomes	
	2014	2013
Board	Outstanding	Very good
Audit Comm.	Outstanding	Outstanding
Risk Management Comm.	Very good	Very good
Investment Comm.	Very good	Very good
HR & Remuneration Comm.	Outstanding	Very good
Corp. Governance & Social Resp. Comm.	Outstanding	Not yet appointed

## Ethical, Anti-corruption business conduct

The company's vision, missions, and goals adopted in late 2013 are still based on morality, ethics, and integrity as the cornerstone of business. Its performance illustrates the Board-approved code of conduct. Similarly, its work procedures frame the performances of the Board,

executives, and employees, marked by integrity, transparency, morality, and ethics, and free of conflicts of interest. Such are the company's values and firm determination to resist corrupt practices in all forms.

This year the company made several attempts to enhance the principles of moral and ethical business that resists corrupt practices in all forms so as to elevate them to the context and approach of, and garner acceptance by, domestic entities and international organizations. Below is a summary of the actions taken:

💡 The company declared its intention to join the Thai Private Sector Collective Action Coalition against Corruption (CAC) Project, representing cooperation between eight institutions, namely the Thai Institute of Directors (IOD), Thai Chamber of Commerce, International Chamber of Commerce, Thai Listed Companies Association, Thai Bankers' Association, Federation of Thai Capital Market Organization, Federation of Thai Industries, and the Tourism Council of Thailand, under the support of the Center for International Private Enterprise (CIPE). This move illustrated the company's desire to join the coalition by lending cooperation to the public sector, the civil society, the mass media, and international organizations in establishing a standard for transparent business. The company is committed to observing the established framework and procedures, which conform to international principles. Such declaration was affirmed by CAC on December 2, 2014.

💡 The company revised its three codes of conduct (corporate, executive, and employee levels) by analyzing aspects that merit amendment in the context of current economic, social, and environmental settings to make them watertight. Another consideration is to meet the company's new vision, goals, and strategies for tangible results. To this end, the company has drafted code amendments and gathered the essences of all three codes in one place, while incorporating comprehensive practical guidelines on significant issues for its sustainability, including:

- Definition of the rule for all to comply with the code of conduct
- Reporting of suspected or complaints about non-compliance with the code

- Process for complaint-handling, ranging from fact-finding to feedback to whistle-blowers
- Protective measures against retaliation and for easing the damage done to complainants, whistle-blowers, or those that cooperate in reporting non-compliance or violation of the code
- Violation of the code and punishment
- Sustainable development
- Resistance to corruption and bribery
- Transactions with the public sector
- Prevention of conflicts of interest
- Appropriate giving or acceptance of gifts, entertainment, and benefits
- Prevention of money laundering
- Political neutrality
- Treatment of stakeholders
- Safeguarding of company data, assets, and finance
- Human rights
- Environmental stewardship
- International business operation
- Information disclosure.

This draft code of conduct is under the management's consideration. Once endorsed, it will be proposed to the Board for concurrence before company-wide enforcement.

💡 Campaigns on corporate values: Under the new strategic plans, corporate values promote corporate capability, leading to sustainable growth. The five values make personnel "smart and conscientious members of society". Like last year, the company also campaigned to raise awareness and memorization of corporate values by means of assorted forms of communication that repeat the message and touch hearts to become second nature to them, who would gradually take desirable behavior to heart.

Value	Desirable behavior	Promotion in 2014
<p><b>Reliability</b></p> <p>Do one's best, with efficiency and effectiveness to meet stakeholders' expectations in a balanced manner. Secure credibility and trust from all sectors that will do business or join activities with the company.</p>	<ol style="list-style-type: none"> <li>1. Be inquisitive and constantly develop work standard in a timely way</li> <li>2. Focus on work efficiency and effectiveness</li> <li>3. Strive for unity and teamwork</li> </ol>	<ol style="list-style-type: none"> <li>1. Continually communicate values through Emails and the intranet</li> <li>2. Design a logo and mascot for the values for simple memorization</li> <li>3. Educate and promote understanding of the significance of corporate values</li> <li>4. Organize a "Team Synergy: Conveying Core Values" work shop to study desirable behavior of the five values</li> <li>5. Stage promotional activities for the Happiness value</li> </ol>
<p><b>Accountability</b></p> <p>Professionally and responsibly promote the company's growth in business execution and outcomes.</p>	<ol style="list-style-type: none"> <li>1. Leverage in-depth skills to achieve corporate goals</li> <li>2. Ponder work impacts on all stakeholders</li> </ol>	
<p><b>Trust</b></p> <p>Be committed to good governance, morality, and the code of conduct with social responsibility to promote confidence and trust by all sectors.</p>	<ol style="list-style-type: none"> <li>1. Perform with transparency, integrity, morality, and ethics</li> <li>2. Treat others fairly</li> <li>3. Establish good internal control and internal audit systems</li> </ol>	
<p><b>Challenge</b></p> <p>Be committed and challenge by focusing on corporate value supplementation and expand business to achieve goals so as to remain a domestic power business leader and strive for leadership in Asia-Pacific power.</p>	<ol style="list-style-type: none"> <li>1. Strive for business progress and security with due regard for growth in value</li> <li>2. Be a creative self-starter</li> <li>3. Be undaunted by obstacles</li> <li>4. Dare to make decisions</li> </ol>	
<p><b>Happiness</b></p> <p>Employees are filled with engagement to and love the company, happy with their tasks. Establish values on collaboration and teamwork. Establish a work ambience that promotes motivation and efficiency improvement toward an "Employer of Choice".</p>	<ol style="list-style-type: none"> <li>1. Establish a lively workplace and a good work ambience</li> <li>2. Love one's job and duties. Be contented with work accomplishments</li> <li>3. Have a sense of belonging</li> <li>4. Respect each other's rights</li> <li>5. Adhere to Sufficiency Economy in life for work-life balance</li> <li>6. Together maintain an ambience of unity and affection</li> </ol>	

## Complaint-handling and Remedy

The company has designated the Office of the Company Secretary and Internal Audit as stakeholder complaint-handling and whistle-blowing channels for the performances of units, employees, executives, or parties related to the company. These matters deal with the violation of or non-compliance with laws, policies, regulations, corporate governance, and the code of conduct.

Whistle-blowers or complainants can use telephones, letters, Emails, or the company's website to state details about the case together with their names, addresses, and

telephone contacts. They can send such details to the Office of the Company Secretary or Internal Audit. Alternatively they can send them to the Chief Executive Officer, independent directors, or the Audit Committee, who will direct an investigation of the information and report it to the Board directly.

In verifying each complaint, the company appoints a fact-finding panel to also seek corrective actions, which relevant units join. Progress reports and recommended corrective actions or compensation must be provided to the management within due time, and the outcomes must



be relayed to the whistle-blowers or complainants after the management has reviewed the verification outcomes and endorsed compensation measures.

The company keeps confidential the name, address, and data of each whistle-blower or complainant, without revealing these data to unauthorized parties, except as required by law. Access will be granted only to those responsible for investigating complaints.

This year the company studied the principles of international-standard complaint-handling and compensation measures so as to improve and standardize its own complaint-handling process and procedures as well as its compensation measures, which will be key tools for

the prevention of and resistance to corrupt practices in line with the company's desire. The company's planned completion of this task is in 2015.

Contact channel	Telephone	Email
Independent directors/ Company Secretary	0 2794 9510	CS@ratch.co.th
Audit Committee/ Internal Audit	0 2794 9520	internalaudit@ ratch.co.th
Letter		Website
Ratchaburi Electricity Generating PCL. 8/8 Moo 2, Ngam Wong Wan Road, Tombon Banghken Amphoe Mueang, Nonthaburi 11000		www.ratch.co.th/en/ contact

## Engagement and Business Network Building

Responding to the strategic plan to seek alliances for enhancing potentiality, competitiveness and ability to penetrate new markets, the company has actively participated in various industry associations and relevant institutions in Thailand and Internationally, aside from strengthening relationship with business alliances as usual. This is also an opportunity to learn from the expertise of those organizations and institutions, share experience from them as well as extending collaboration on social and environmental activities. At present, the company has engaged as a member of many associations and institutions as listed below:

Organization	Participation
Thailand Management Association (TMA)	<ul style="list-style-type: none"> <li>Attending the meetings, training courses and seminars to enhance business management knowledge as well as activities to build network.</li> <li>Offering supports for activities organized by TMA.</li> </ul>
Thai Institute Of Directors (IOD)	<ul style="list-style-type: none"> <li>Participating the meetings and seminars that promote corporate governance for executives and directors.</li> <li>Offering supports for its activities</li> </ul>
Association of the Electricity Supply Industry of East Asia and Western Pacific (AESIEAP)	<ul style="list-style-type: none"> <li>Sharing information and news about regional electricity industry.</li> <li>Attending the meetings, seminars and study visits about regional electricity industry.</li> </ul>
ICC Thailand National Committee	<ul style="list-style-type: none"> <li>Attending the meetings, seminars, training courses and activities.</li> <li>Offering supports for activities organized by The Thai Chamber of Commerce.</li> </ul>
Board Of Trade OF Thailand	
Electricity Supply Industry Association of Thailand (TESIA)	<ul style="list-style-type: none"> <li>Appointed as the President.</li> <li>Attending the meetings, seminars, training courses and activities for sharing experience, tightening relationship with other members as well as</li> <li>Offering supports for activities organized by TESIA.</li> </ul>
Thailand Business Council for Sustainable Development (TBCSD) under Thailand Environment Institute (TEI)	<ul style="list-style-type: none"> <li>Being a council member, an associate member and a public relation member.</li> <li>Joining force to develop environmental project, the Solar Home project at Ban Hua Ha, Mae Hong Son.</li> <li>Strategically developing and implementing social project, the Women Empowerment in environmental and natural resource management.</li> <li>Attending the meetings, training courses, seminars, study visits and activities organized by TBCSD.</li> <li>Offering supports for its activities</li> </ul>




## Managing Economic Sustainability

- ✓ Enterprise value growth to 120,244 billion baht.
- ✓ Electricity dispatch of 25.2 million MW to serve domestic demand.
- ✓ Expand into integrated energy business and increase investment.
- ✓ Achieved new investment in domestic SPP and solar farm projects in Japan.

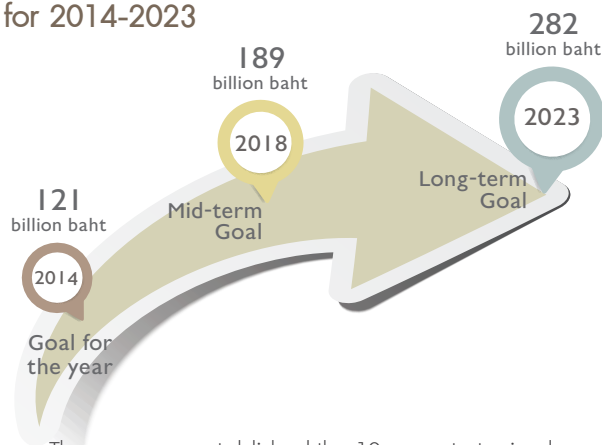
Electricity is one of key economic driver for the country. The company commits to creating corporate growth in order to achieve the goal to be a leading value-oriented integrated energy company in Asia-Pacific together with supporting national power security. Meanwhile, the company focuses on management of risk that may forestall the company’s economic sustainability development. The said operation will benefit not only the company, but also the society and environment overall.



## Enterprise Value Creation

In 2014, enterprise value creation was the key guideline employed to specify the company’s short-, mid- and long-term business goal via assessment of current economic value and future enterprise value of the company. To this end, the company takes into account internal and external investment opportunities. Meanwhile, operation monitoring system was developed, with the quarterly operational report to ensure that the company will be able to achieve the corporate growth as per established plan.

### Goal of Enterprise Value for 2014-2023

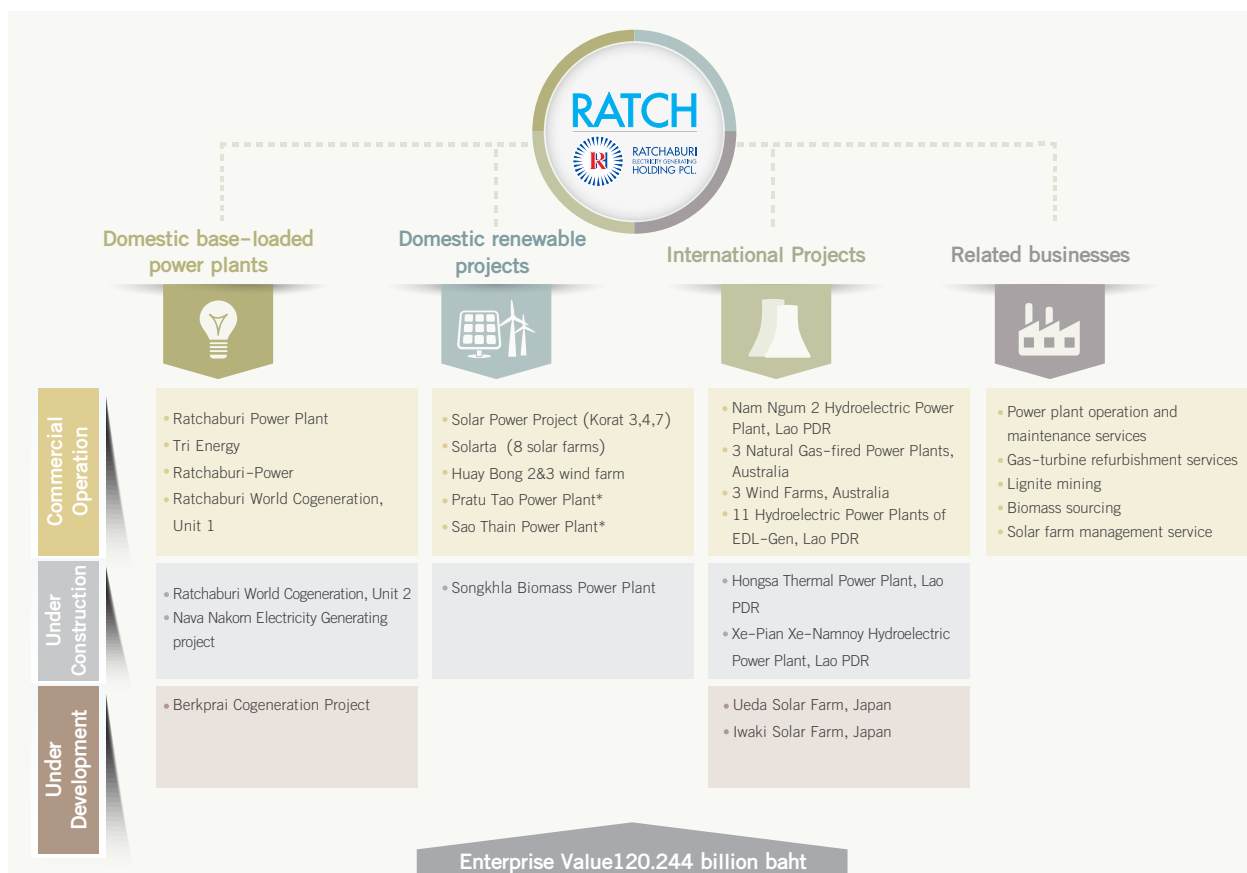


The company established the 10-year strategic plan as a framework to define the business direction during 2013-2023. The corporate growth will be developed according to the said plan in order to maintain the company's leadership in Thailand's power generation business and enhance potentiality and competitiveness that will drive the company to become a leading value-oriented integrated energy company in Asia-Pacific. Nevertheless, the efficiency of 10-year strategic plan will be assessed in order to revise plan in 2015 to ensure that the plan will be in line with internal and external situation, and the risk management can cope with situation in a timely

manner, with adequacy to maintain the asset quality as well as supporting the business expansion.

In 2014, the company set a corporate growth goal at 121 billion baht, increasing by 10 percent from 2013 based on four key strategies namely; 1) maximizing current asset management 2) focusing on new power plant development projects in existing markets 3) seeking partners to grow investment in the power business in emerging markets and 4) growing investment to downstream businesses

As of 2014, the company's the enterprise value reached 120.244 billion baht which can be divided into 98% from maximizing current asset management and 2% from developing three new power plant projects. For new investments, particularly for overseas business, detail of the project must be thoroughly studied and all risks must be considered carefully. Then, decision making always takes time. The company expects that some projects can reach the clear conclusion in 2015 and there are 9 promising base-loaded and renewable power projects that are in process of studying and considering investment.



Remarks\* These projects developed to utilize associated gas at crude oil production field in Sukhothai.

## Power System Security Support

In 2014, the power plants of the company group generated electricity of 25.2 million MWh which were distributed domestically. Ratchaburi Power Plant, Tri Energy, and Ratchaburi-Power generated electricity of 22.4 million MWh (accounting for 89% of entire power generation capacity of the company group) to mainly support the power grid in the western Thailand. Those three main power plants can generate electricity as per the PPA, support the national power stability and efficiently meet the domestic power demand as well as being power generation reserves for southern Thailand.

The company focuses on the power plant management efficiency in both capacity and profitability. There are three factors that can measure the success of the said management, such as Equivalent Availability Factor (EAF), Reliability Factor (RF) and Dispatch Factor (DF) which are

specified as a criteria of corporate performance appraisal and risk management policy for commercially operated power plants.

In 2014, Ratchaburi and Ratchaburi Power Power Plants, the main power plants of the company, with combined capacity of 5,045 MW could manage Equivalent Availability Factor (EAF) and Reliability Factor (RF) at the level that is better than the target and the PPA criteria. However, Dispatch Factor (DF) was below the target because the order from the national Control Center adjusted lower due to the shutdown of gas field in Western area that is regard as an uncontrollable external factor. As a result, the power plant had the revise the annual maintenance plan and the unplanned outage according to the fuel availability.

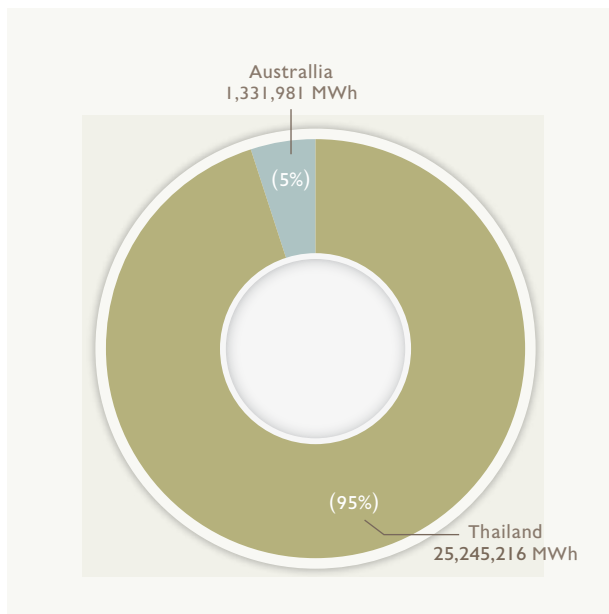
### Average Equivalent Availability and Reliability Factors 2014

Power Plant	Equivalent Availability Factor ( EAF)		Reliability Factor (RF)		Dispatch Factor (DF)	
	Target	Operational Results	Target	Operational Results	Target	Operational Results
Ratchaburi Power plant	90.50	99.93	94.87	98.09	52.00	49.43
Tri Energy	97.50	88.86	98.70	94.59	50.00	51.17
Ratchaburi Power	89.80	90.70	95.50	94.80	75.00	49.10

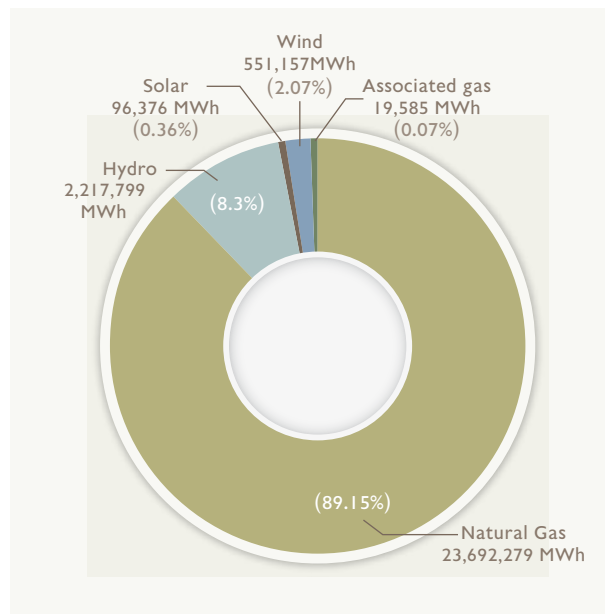
The company commits to generating power to support the power security of Thailand and other countries where are the company's investment destination in order to enhance the nation and organizational economic sustainability.

## Electricity Generation of Company's Power Plants 2014

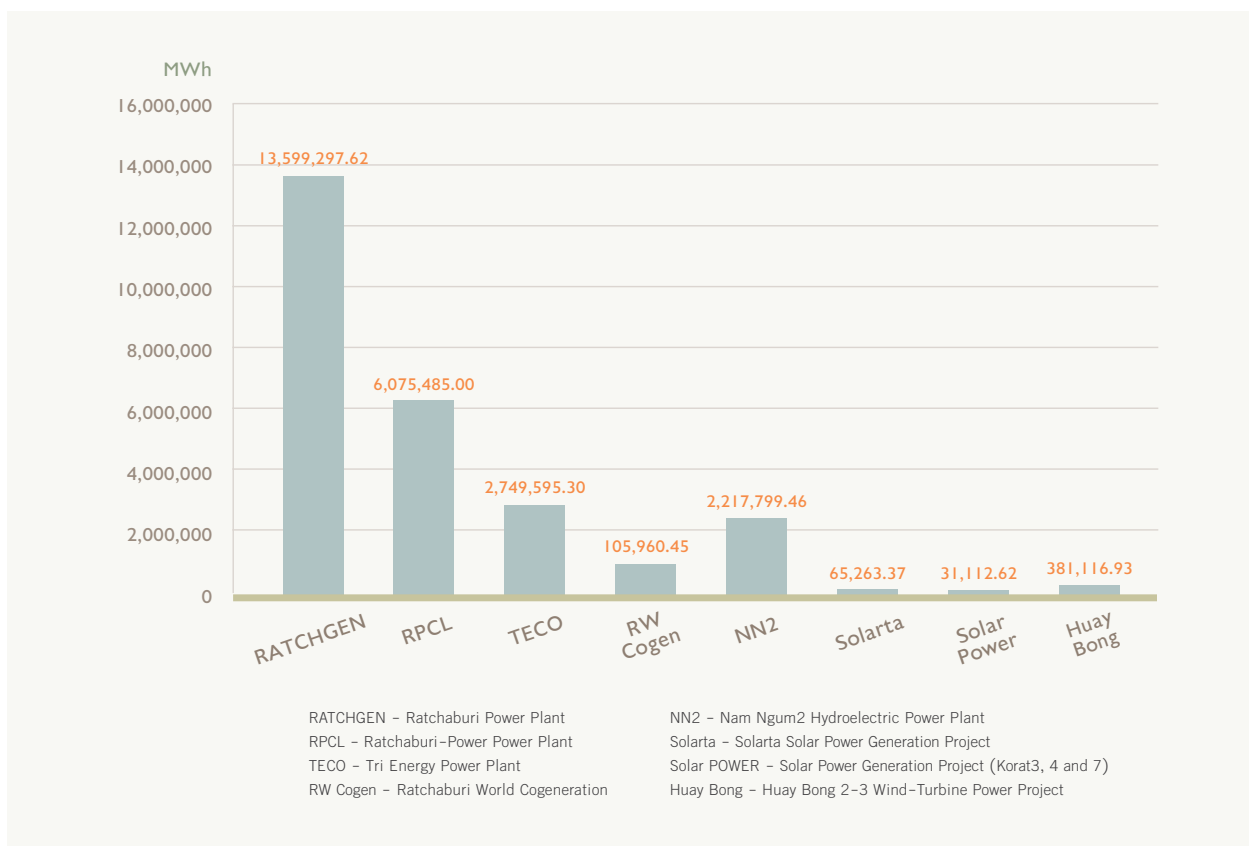
Generated and Distributed Electricity in 2014



Electricity Generation Categorized by Fuel



Electricity Distribution in Thailand

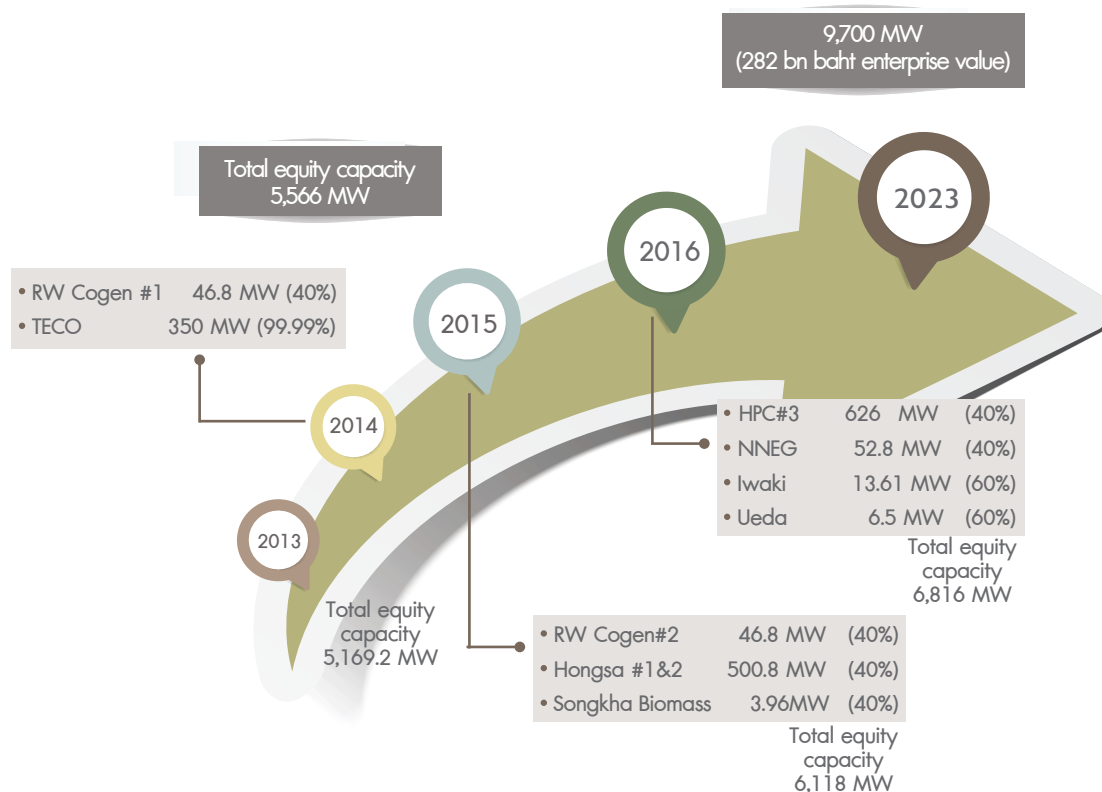


The operational progress based on the strategy to enhance the corporate growth in 2014 can be summarized as follows:

### Maximizing current asset management

<p>✓ <b>Business merger and acquisition of Tri Energy Power Plant</b></p>	<p>The acquisition of 50% shares of the Tri Energy Co.,Ltd from the former shareholder results the company to become the sole shareholder of Tri Energy Power Plant and increase generating capacity by 350 MW. The transaction benefits to inventory management of Ratchaburi Power Plant by equipment and parts sharing because Tri Energy and Ratchaburi Power Plant installed combined cycle technology of the same manufacturer, thus reducing cost.</p>
<p>✓ <b>Financial cost management</b></p>	<p>RH International (Singapore) Corporation Pte. Ltd. (RHIS), the company's subsidiary, issued the 5-year senior note bond, with the maturity period in 2019 at the fix rate of 3.5% per year. Targeting at foreign investors, this bond's total value is 300 million baht which can help reduce the financial cost of RATCH – Australia Corporation Limited (held by RHIS).</p>
<p>✓ <b>Divestment of less quality assets</b></p>	<p>The company liquidated equity of Sustainable Energy Corporation Co., Ltd. and Sukhothai Energy Co., Ltd. The sales income will be used for funding other promising investment projects.</p>
<p>✓ <b>Progress of Ratchaburi World Cogeneration Power Plant</b></p>	<p>In November 2014, 117-MW Ratchaburi World Cogeneration Unit 1 with 15-ton stream/hour production capacity was commenced commercial operation for supporting EGAT's power grid as schedule. The unit 2 plans to be completed and start commercial operation in March 2015.</p>
<p>✓ <b>Progress of Hongsa Power Plant</b></p>	<p>The 1,878-MW lignite-fired power plant aims to serve the electricity needs of people in northern Thailand. The project consists of three units of power plants, with capacity of 626 MW each. The electricity of 1,473 MW will be distributed to EGAT and 100 MW will be distributed to Lao PDR. Meanwhile, the remainder of electricity will be used in generation process of the power plant and mining.</p> <p>The company jointly holds equity of 40% in Hongsa Power Co., Ltd. The progress has been seen in the power plant's work, the construction of transmission system and high voltage electricity station, the installation of mining equipment, opening excavation, the construction of reservoir for supporting the power generation, equipment and machine test and preparation of first synchronization.</p> <p>The commercial operation of the power plant, unit 1 and 2, with combined capacity of 1,252 MW is scheduled in 2015. For the unit 3, the construction is scheduled to be finished and commercially operated in 2016.</p>

## Commercially Operated Capacity



## New investment and potentials in existing markets

<p>✓ Investment in 100-MW Berkprai Cogeneration Power Plant, Thailand</p>	<p>The company entered into the shareholder agreement to invest in Berkprai Cogeneration Co., Ltd. which is the developer and operator of 100-MW natural gas-fired SPP cogeneration project. This project entered into 25-year PPA with EGAT at capacity of 90 MW and the commercial operation is scheduled in 2019. The other capacity of 10 MW, with stream of 15 tons per hour will be generated and distributed to the subsidiary of Rajburi Sugar Co., Ltd.</p>
<p>✓ Feasibility study of RDF power plant, Thailand</p>	<p>The company conducted the feasibility study for ascertaining details and worthiness of investment in the refuse-derived fuel (RDF) in Thailand in response to the government policy that in line with the company's intention on environmental stewardship. The company has negotiated with alliances for joint investment and will likely reach the conclusion in 2015.</p>
<p>✓ Feasibility study of wind farm development, Australia</p>	<p>RATCH – Australia Corporation Limited, one of subsidiaries, studies details and possibility of two wind farm development in Australia, with the capacity of 150 MW. The conclusion will likely be seen in 2015.</p>

### Seek partners to grow investment in emerging markets

<p>✓ Investment in the solar farm project, Japan.</p>	<p>The company joined hands with Chow Steel Industries Co., Ltd. in order to invest in Ueda solar farm project, Nagano prefecture with PPA capacity of 10.8 MW and Iwaki solar farm project, Fukushima with PPA capacity of 22.6 MW. The 20-year power purchase agreements of those two projects were made with major off-takers of the region and granted JPY40 feed-in tariff per unit (excluding consumption tax) from the Japanese government.</p> <p>Both parties established Oversea Green Energy Co., Ltd. in order to provide management services to solar power generation in Japan and RIC International Investment Co., Ltd. to support the investment in both projects. Ratchaburi Energy Co., Ltd., a subsidiary, holds 60% stake and the alliance holds 40% stake.</p>
<p>✓ Feasibility study of Myeik Power Plant Project, Myanmar</p>	<p>The company entered into the memo of understanding (MOU) with Department of Hydropower Planning, Myanmar's Ministry of Electric Power to develop 2,640-MW clean coal-fired Myeik power plant project based on the collaboration with one Thai business alliance and two business alliances in Myanmar. During the previous year, the major progress included the location selection and public consultation and dialogue with people living near project location.</p>
<p>✓ Feasibility study of base-loaded power plant project, Myanmar</p>	<p>The company conducts a feasibility study of the 600-MW base-loaded power plant in Myanmar. This project will be reached the conclusion in 2015.</p>

### Growing investment to downstream businesses

<p>✓ Feasibility study of investment in coal mining, Indonesia</p>	<p>The company conducted the feasibility study to ascertain the detail of one mining project in Indonesia. It assessed investment possibility and this project will likely reach the conclusion in 2015.</p>
<p>✓ Feasibility study of fuel sourcing business, Myanmar</p>	<p>The company negotiated with business alliance to jointly invest in LNG terminal business in Myanmar. The conclusion is expected to be seen in 2015.</p>

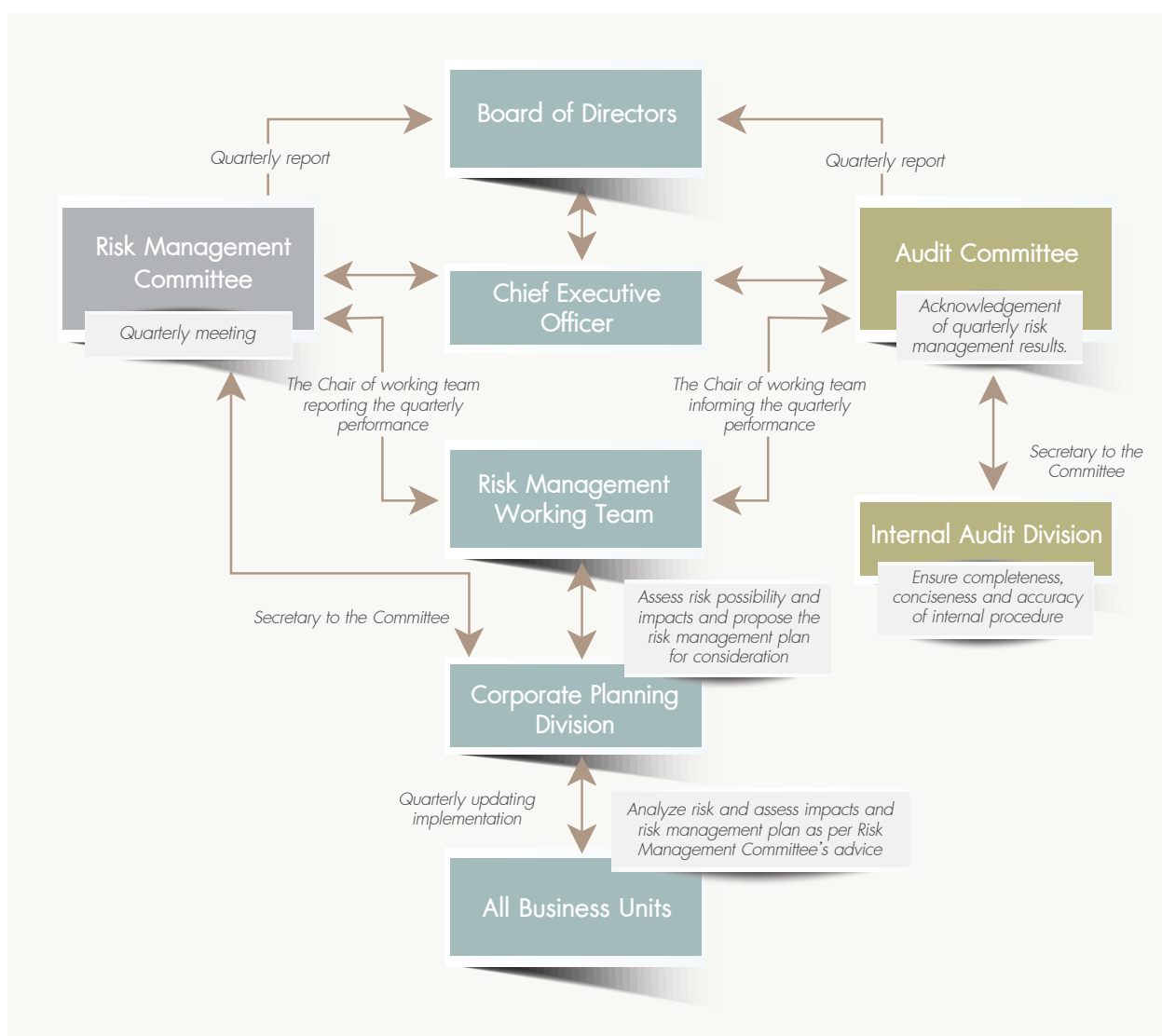


## Risk and Crisis Management

Realizing increased challenges due to business expansion into Asia Pacific region, the company gives significance on management of risk arising from many uncertainties via internal risk management and control system. The Corporate Planning Division and Risk Management Working Group consisting of executives from all disciplines are appointed to be a risk management

and control operators under the supervision of Risk Management Committee and the Board of Directors. In addition, the company has installed established internal audit system to control and prevent risk from internal operation. The said system is responsible by the Internal Audit Division under the supervision of Audit Committee.

### Risk Management Structure



The company assesses and identifies risk factors that may interrupt continued growth of the company, with managing risk approaches as follows:

## Risk Issues:

### 1. Competition

factors affecting and limiting the company's competitiveness at home and internationally includes:

- Government and relevant units' policies
- Preparedness and completeness of materialized information for investment
- Market competition conditions and business alliances

#### Managing Risk

- Coordinate and tighten relationship with relevant agencies for information sharing, monitor changes in the government and relevant units' policies as well as assessing impacts that may affect project investment, development and construction.
- Prepare important documents or license checklist according to the relevant regulations.
- Study and compile information for supporting the project investment and development, such as project location, fuel, water source, license, community and environment, etc. This can be conducted by collaborating with local alliances, government agencies and the specialized consultants that have expertise, with experience in doing business internationally.
- Seek business alliances in Thailand and internationally in order to enhance the investment potentiality as well as the synergy with the EGAT Group and existing business alliances for enhanced competitiveness.
- Focus on the merger and acquisition of operated power plants, with satisfactory performance or promising investment potentiality.
- Expand into coal and natural gas business, increase investment in renewable energy project for mitigating risk and impacts of fuel price volatility and arrange fuel purchasing agreement throughout the PPA terms with major fuel distributors in each market to prevent any volatile price and fuel shortage.

### 2. Operation

The company aims at strengthening its financial status and adding enterprise value. Nevertheless, there are some factors that may forestall the operational success.

- The company and subsidiaries' operational performance does not achieve the target.
- Dividend income from subsidiaries is below the target.
- Enterprise value does not meet the target.

#### Managing Risk

- Arrange the action plan for supporting enterprise value growth based on three-term implementation: a short-term plan (1-2 years) focusing on joint investment or merger and acquisition for immediately enterprise value recognition; a mid-term plan (3-5 years) focusing on financial structure revision, lower investment or disposal of projects that cannot offer satisfactory income; and a long-term plan (6-10 years) focusing on investment in large projects and energy related business in order to secure the long-term cash flows.
- Specify the annual target on CAH Index by quarterly monitoring and assessment and arrange the power plant outage plan at appropriate period in order to maintain the efficiency and distribution availability as per the PPA criteria.
- Monthly monitor the company and subsidiary's performance by comparing to the projection and quarterly report the results to Strategy Steering Team and Strategy Management Committee.

### 3. Financial Matters

Power and energy generation business typically needs high capital for project development and construction. More than 70% of the investment is raised from financial institutions. Effective financial planning and management are implemented to prevent any affect to the company's cost and income. Financial risk factors include:

- Interest rate volatility
- Foreign currency fluctuation
- Lack of liquidity

#### Managing Risk

- Seek financial source with lower cost from financial institutions at home and internationally and ensure that financial planning is in line with the investment plan, with quarterly revisiting of financing need.
- Seek alternative financial sources aside from financial institutions, such as debt securities in order to manage the financial cost at acceptable level and enable fund raising in a timely manner.
- Consider the source of lending and appropriate currency that matches with the type of income currency and find out the financial instruments for hedging the volatile exchange rate and interest rate in case of foreign currency lending.
- Arrange the repayment plan matching with the company's cash flow and quarterly revisit financial structure and cost of the company group aligned with current money market circumstances.
- Efficiently manage the company and subsidiaries' financial cost and tax and maintain stable cash flow and liquidity proven by the credible ratings.

### 4. Personnel

Personnel are regarded as a key driving force for success as per established goal. The top executives lead and specify directions moving forward.

- Retirement of executives in critical position

#### Managing Risk

- Arrange the succession plan for high-level positions, from the Executive Vice President and above, and an individual capability development plan to support the specified job description.
- Assess and classify the employees in each level in order to arrange the personnel potentiality development plan for job advancement.
- Plan the training program for the employees at each level to support their career advancement and retain talented employees.

## 5. Corporate Image

Acceptance of stakeholders can support the corporate stability and sustainability. Factors affecting the company's reputation and image are as follows:

- Community resistance
- Community affected by environmental impact due to construction and operation of power plants
- Negative news that adversely affect the company's credibility

### Managing Risk

- Establish a community relations team to hear the communities' opinion, regularly create the good understanding towards the community's concern and extend collaboration, as well as supporting, enhancing and regularly tightening amiable relationship with communities and stakeholders in the project location.
- Support the Power Development Funds and ensure contribution is given to all groups in and around power plants equally.
- Provide easy-to-access communication and whistle blowing channels and specify quick complaint handling procedures based on constructive consultation that can reach agreed resolution.
- Assess the operational risk that may affect the communities by studying the primary information from EIA report and prevention and mitigation measures. Arrange information to facilitate the communication with communities, especially when the communities raise concerns or complaints.
- Arrange the well-being quality development program for communities around the power plants by focusing on a program that can meet the needs of wider groups of people. The company also complies with preventive and corrective measures for concretely alleviating the social impact as specified in the EIA.
- Disclose the company's operational performance via media channels and regularly monitor the company's news and analyse concerned issues that may affect the company's reputation.
- Review the crisis communication plan and link the plan with the subsidiaries' crisis plan for effective and systematical communication of the company group during the crisis.
- Respond the needs of mass media by giving updated information in a timely manner as well as creating and maintaining good relationship with them.

## 6. Regulations

Factors that may affect the company's operation are as follows.

- Operations that are not complied with the relevant requirements and regulations

### Managing Risk

- Establish a unit responsible for compliance with the SET's requirements as well as a unit monitoring and control the company and the company group's operation to be in line with related law, regulations and requirements.
- Study relevant law and regulations of the investment destinations in order to assess risks that may affect the investment as well as seeking assistance from legal advisors specialized in analysing information and giving legal advice for investment abroad. The company should collaborate with local alliances for finding out in-depth information on investment regulations and procedures.

## Crisis Management

All power plants of the company specify the crisis management measures to cope with uncontrollable incidents that may affect life, assets, environment and communities. The internal and external risk factors are assessed and the emergency response plan covering the

topic of fire, chemical leakage, flooding, protest and terrorist attack was arranged. The procedure and methods to cope with the unexpected situation can be divided into 3 levels based on the severity of crisis:

- Level 1:** Situation that can be controlled by the crisis management team of power plant
- Level 2:** The emergency situation escalates until there is an injured person or a death. The crisis management team of power plants cannot control the damage and need some assistance from external units.
- Level 3:** The crisis escalates until there is an injured person or a death. Equipment and personnel are not enough to control the damage and the crisis management team need assistance from external units.

## Crisis Management Guidelines

The power plants of the company group places great emphasis on best preparation. As a result, annual drills for crisis management based on simulation, with different severity levels have been regularly organized.



In 2014, the power plants of the company group did not face any emergency incident that affects business operation, economy and environment.

## Emergency Response Drills at the Power Plants in 2014 included:

Power Plants	Number (Times)	Scenario	Severity Level
Ratchaburi Power Power Plant	26	Fire	Level 1
	1	Fire	Level 2
	1	Fire	Level 3
	3	Chemical leakage	Level 1
	4	Gas leakage	Level 1
	1	Oil leakage	Level 1
Ratchaburi-Power Power Plant	7	Fire	Level 1
	2	Chemical leakage	Level 1
Ratchaburi World Cogeneration Power Plant	1	Fire	Level 1
Nam Ngum 2, Lao PDR	1	Opening flood gate spillway	-
	1	Emergency diesel	-
	1	Restoration line 22KV	-

## Participation in Coping with Natural Gas Shortfall

### Myanmar Natural Gas Field Shutdown

Natural gas field in Myanmar is the key fuel source for Ratchaburi Power Plant, Ratchaburi-Power and Tri Energy. The three power plants imported natural gas from Yadana and Yetakul gas fields of about 550 million square feet per day to support their electricity generation. Nevertheless, those fields had four planned and unplanned shutdown thus significantly affecting the fuel security of the company's three power plants and national power system. In Thailand, 70% of the entire power generation depends on natural gas. 60% of natural gas comes from Gulf of Thailand and 40% from Myanmar. Currently, natural gas from Myanmar used for power generation is 1.030 billion cubic feet. As a result, those three power plants have prepared for the said shutdown by firing oil as secondary fuel instead of natural gas. The bunker oil is fuel for the Ratchaburi Thermal Power Plant and the diesel is fuel for Ratchaburi, Ratchaburi-Power and Tri Energy Combined Cycle Power Plants.

### Responsive Measures

Those three power plants have collaborated with National Electricity Power System Control Center of EGAT

which are the central units to control the electricity generation of Thailand as well as other relevant units to maintain the power security due to the said shutdown. The responsive measures of those power plants are:

- Provide the bunker oil reserves of 67 million liter for Ratchaburi Thermal Power Plants which can support the operation for around 10 consecutive days and the diesel reserves of 58 million liter for Ratchaburi Combined Cycle, Ratchaburi-Power and Tri Energy which can support the operation for around 3 consecutive days.
- Test operation when oil is in use for assessing the efficiency and distribution availability of power plants.
- Check and test the fuel-gas desulfurization (GFD) efficiency to maintain at its capacity of 92.7%.
- Postpone the power plant maintenance work until the shutdown finishes in order to maintain the power generation capacity to serve the domestic electricity demand.

The power plants of the company group can continuously generate electricity to meet the domestic demand and support the national power security of the country, without blackout or brownout.



## Our People

- ✓ Restructure organization and remuneration responding to the revised strategy.
- ✓ Prepare succession plan to handle senior executives retirement within five years.
- ✓ Revise wage and welfare to enhance working capability and qualified personnel retention.
- ✓ Achieve “Zero Accident” operation.

Employees constitute a crucial mechanism that drives the company’s aspiration “to be a leading value-oriented integrated energy company in Asia-Pacific” as defined by its vision. Their knowledge, capability, commitment, and dedication are all essential for the organization’s business operation success and achievement of goals with stability and sustainability.

Under the Strategic Plan for 2013-2023, one major strategy is to strengthen the organization including enhancement of potentiality and competitiveness of the employees so that they may be ready and able to completely fulfill the organization’s direction of operations and goals.

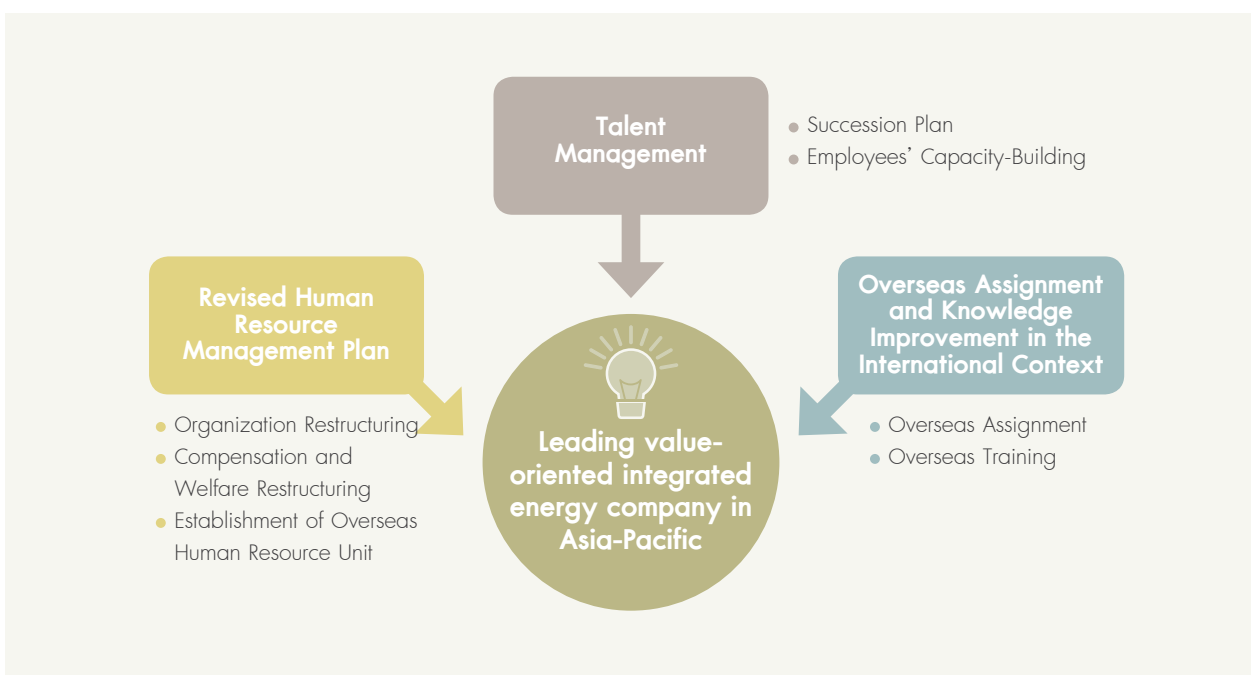
The company values personnel management with seriousness and continuity. It adheres to the framework of

labor laws, code of conduct, personnel policy, and its regulations on personnel management. It has based the systems and processes on international standards and fairness in the recruitment and employment of qualified employees from specific vocations and several disciplines with fair compensation and welfare, equal to industry peers. It is also the company’s policy to retain employees with integrity and potential in the long term. At the same time, the company is committed to increasing knowledge, develop skills and competencies of the employees in line with the business strategies for higher efficiency and effectiveness. The company equally values safety, occupational health, and environment in the workplace, since they will motivate work and promote employees’ productivity.

Personnel management this year was revised to meet internal and external challenges so that the organization and employees could move forward with stability and strength and are able to cope with every situation. The challenges with implications on its personnel management are as follows:

Internal factors	External factors
<ul style="list-style-type: none"> <li>● Company’s business target was revised from the former focus on power generation to integrated energy businesses.</li> </ul>	<ul style="list-style-type: none"> <li>● Fiercer business competition requires more personnel.</li> </ul>
<ul style="list-style-type: none"> <li>● Scope of business strategy was expanded to regional (Asia-Pacific).</li> </ul>	<ul style="list-style-type: none"> <li>● There was a shortage of personnel with specific experience and expertise in labor market.</li> </ul>
<ul style="list-style-type: none"> <li>● Demand for personnel with specific experience and expertise increased.</li> </ul>	<ul style="list-style-type: none"> <li>● Implication of human rights had significant impact to business operation in international arena.</li> </ul>
<ul style="list-style-type: none"> <li>● Eight senior executives will retire within five years.</li> </ul>	
<ul style="list-style-type: none"> <li>● The company set a goal to become Employer of Choice.</li> </ul>	

To meet the challenges and to drive toward the defined goals with smoothness and success, the company focused on the following issues:





## Achievements in 2014

### 1) Human Resource Management Strategic Plan Revision

The long-term strategic plan was revised, since a business goal was reset toward integrated energy businesses to create enterprise value with stability and strong growth. Accordingly, the company's human resource management plan was revised to meet the goal and direction as follows:

#### 💡 Organization Restructuring

In June 2014, the company achieved this by rearranging organizational structure in accordance with its strategic plans and dividing them into five disciplines:

- Business Development 1 - responsible for business development in Thailand, neighboring countries and in ASEAN countries

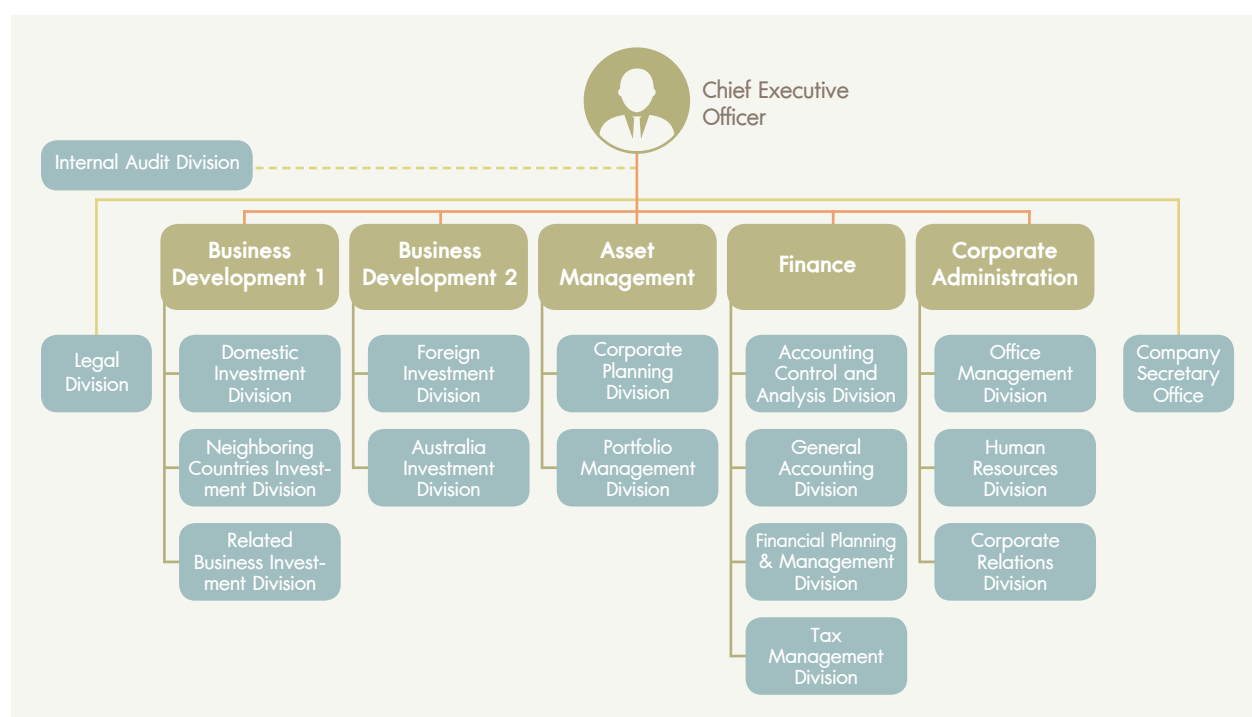
- Business Development 2 - responsible for seeking business opportunities in Australia, a former business base, and in other countries in Asia-Pacific
- Asset Management - responsible for business planning, monitoring, and assessment of performance, risk management, and maximization of current asset management
- Finance - responsible for financial planning and management to support investment, budget, tax management, and accounting policy
- Corporate Administration- responsible for human resource management, safety, occupational health, and the environment in workplace, as well as management of corporate image

### Growth strategies



Boost organization's internal competencies

### Revised Organization Structure



As for the manpower allocation to support various groups under the revised structure, consideration was made for current employees with knowledge, expertise, and direct experience, or experience related to the main responsibility of a particular group, with recruitment of new employees.

#### **Compensation and Welfare Restructuring**

The company undertook compensation restructuring to increase its capability and potential in its effort to recruit and motivate knowledgeable and capable employees, retain highly capable employees, as well as providing employees with incentives and foster engagement. According to the study in collaboration with an independent external consultant, the average compensation was compared with other peer-industry agencies, including the public sector, state enterprises, and the private sector. The information was used to revise the compensation of the employees at each level to be competitive in the labour market. The compensation restructuring was effective from July this year. Moreover, the company improved the welfare of employees assigned overseas, appropriate to the living conditions and the costs of living in a given country.

#### **Establishment of Overseas Human Resource Management Unit**

To meet its business goal of strong overseas growth, the company set up an overseas human resource management department to support overseas business development. It is responsible for personnel planning in collaboration with the business development discipline by recruiting personnel with qualifications and ability appropriate to the positions and responsibilities; studying labor laws and relevant regulations, tradition, and culture of each country to prepare them before taking up their duties; and continually monitoring and making visits to receive comments.

## **2) Talent Management**

The company promotes professional advancement of employees at all levels by constantly providing various forms of skill-upgrading and capacity-building for

employees to stimulate and retain highly capable personnel in the long term. As the company's business operation is expanding its scope to the regional level, and as eight senior executives will be retiring over the next five years, the company must recruit the personnel to fill the positions and the vacant positions of the succeeding personnel for continuity in the company's operation. Therefore, talent management was the company's accelerated task this year.

#### **Succession Plan**

The company has set up a succession plan to prepare employees to replace the eight executives who will retire between 2015 and 2019. Thirty-nine executives at the levels of Executive Vice President and Division Head participated in the succession planning, starting from definition of the company's leadership qualifications under the 'BEST' concept of which consists of 1) Build Network: Developing business network to benefit from synergies. 2) Empower Team: Employing the strength of outstanding capable employees to build a bottom-up team that empowers team members to make decision. 3) Seek Possibilities: Discovering new business opportunities, with careful decision making that suits current situation and creating an understanding on global market among coworkers. 4) Think Strategically: Turning a plan into practice for the results that meet the established strategy and plans based on efficiency and effectiveness. Also, the leadership characters are assessed, with weakness analysis in order to tailor individual development plan. This year the company identified highly capable personnel to fill the executive posts for the next five years. Individual skill-upgrading and capability-building plans were also charted in line with the analysis. Moreover, the skill-upgrading and competency-building plan for a group of highly qualified employees at lower levels was envisaged to equip them with the necessary requirements to fill higher positions in the future.

#### **Upgrading the Employees' Competencies and Skills**

This year the company gave priority to the increased technical knowledge and skills of employees so that they might support the development of domestic and overseas

projects in a timely way. The company, in collaboration with EGAT (a state enterprise with expertise in the development, construction, machine operation, and maintenance of power plants, as well as responsibility for national power security for over 60 years) assigned 21 employees to attend eight training courses such as Power Generation and Transmission, Gas Turbine Principles, and

Steam Turbine Power Plant. Moreover, a training course in the Burmese language was also provided to support the investment in Myanmar. In 2014, the number of employees passed the internal and external training courses was 95% out of the entire employees, with 8,467 training hours in total or 43.4 hours/person/year averagely which was higher than the target of 18 hours/person/year.

2014 Operation	Target	Outcome	Percentage of employees passed training courses	
	hours/person/year	hours/person/year	Female	Male
Training course for top executives	18	111.08	44.88	55.12
Training course for mid-level management	18	41.25	33.03	66.97
Training course for first-line management	18	33.75	43.76	56.24
Training course for operational level officer	18	40.50	51.43	48.57

### 2014 Employees' Competency Development

Competency	Curriculum	Courses
<b>Skill Development</b>	For top executives	<ul style="list-style-type: none"> <li>- EGAT Assistant Director Development Program (EADP)</li> <li>- EGAT Get Ready Program III (EGRP III)</li> </ul>
	<b>Management</b> For mid-level and first-line management	<ul style="list-style-type: none"> <li>- People Management (HR for Non HR)</li> <li>- Transform Vision &amp; Mission into KPIs</li> <li>- Coaching for High Performance</li> </ul>
	<b>Seminar promoting and fostering corporate value</b>	<ul style="list-style-type: none"> <li>- Team Synergy : Conveying Core Value</li> </ul>
<b>Knowledge Enhancement</b>	Power plant management technique	<ul style="list-style-type: none"> <li>- Power Generation and Transmission</li> <li>- Gas Turbine Principle</li> <li>- Nuclear Energy Technology</li> <li>- Performance Test by Production Efficiency Division</li> <li>- Steam Turbine Power Plant</li> <li>- Meteorology-related Works; and Air Pollution and Mining Environmental Management</li> <li>- Power Principle</li> <li>- Mining Management; and</li> <li>- Environmental and Community Management</li> </ul>
	Foreign language	<ul style="list-style-type: none"> <li>- Burmese language</li> </ul>

### 3) Overseas Assignment and Knowledge Improvement in the International Context

#### Overseas Assignment

It is the company’s policy to support employees assigned overseas so as to motivate them, promote new knowledge improvement, as well as broadening their horizons. The company defined its overseas assignment guidelines contained in the overseas assignment orders under the company’s rules on personnel management.

Employees assigned to work with the company’s subsidiaries, joint ventures, and branches overseas will be secondees with a term of no more than two years. Currently, there are 11 employees from the parent company assigned to work overseas, or 5.64 percent of the total employees.

#### Overseas Training

This was the first year in which the company has organized overseas on-the-job training to improve knowledge and upgrade skills of the employees at the international level. It assigned four new employees to work at Hongsa Power Project in Lao PDR, with the capacity of 1,878 MW for a year, under close monitoring and performance assessment. It was an accelerated

(fast-track) means of upgrading knowledge, skills, and competency of employees. This way, the employees would quickly learn, understand the working process, perform many functions at the same time, know teamwork and systematic work, and efficiently adapt themselves to changes in various situations.

Country	Assigned employees (Persons)			Positions
	Total number	Male	Female	
Lao PDR	9	9	-	- Managing Director (1) - Chief Finance Officer (1) - Deputy Managing Director (1) - Manager (2) - Officer (4)
Australia	3	3	-	- Managing Director (1) - Executive General Manager (1) - General manager (1)

## Human Rights

It is the company’s policy to treat employees fairly under the company’s code of conduct, as clearly defined in the guidelines for the treatment of stakeholders, including employees. The code of conduct includes provision of safety and occupational health for employees, promotion of engagement and commitment of employees, respect of rights, basic freedom and human dignity, provision of fairness and equality to all employees. The company rejects the behavior or action that constitutes insults causing shame, threat, menace, sexual harassment, or sexual violation within the company, and clearly defines the disciplinary punishment.

### Promotion of Equality and Fairness

The company realizes the importance of promoting equality and fairness in personnel management system as specified in the company's code of conducts and personnel management regulations, which includes recruitment of personnel, retention of qualified personnel, development of skills and capability, compensation and welfare, appointment, transfer, resignation, as well as complaints. The company tolerates differences in age, gender, marital status, family's financial status, race, religion, skin color, and political views. For the criteria of employees' compensation, the company takes into consideration their ability, performance, and dedication. In addition, the base of wage and welfare for male and female employees at each level was equally specified the same rate. This criteria has been applied to all subsidiaries in Lao PDR and Australia. Aside from labor-related regulations and law of each country, the company takes into account the economy, inflation and cost of living of each country to determine base of wage and welfare for employees which will help enhance their life quality and happiness in order to promote superior work efficiency and performance.

Before the transfer or rotation of employees, the company will hold informal discussions with the employees to notify them and receive comments from them before the official announcement in the case of transfer within the country, and at least 30 days in the case of transfer abroad.



### Complaints and Appeals

The company provides channels and processes of complaints and appeals for employees, reflecting its commitment to treating all employees fairly and equitably, under these cases:

1) Hardship or dissatisfaction due to the work environment, employment, chain of command, order or assignment, compensation for work or other benefit, or the supervisor's inappropriate or incorrect behavior, with two complaint-handling channels provided:

- The Chief Executive Officer or the Board of Directors, in the case of termination of employment, to be undertaken within 30 days after the acknowledgement of the order of the termination of employment
- The next-level supervisor, in the case of the immediate supervisor's behavior, by submitting a letter with one's own signature.

2) Apart from the above cases, complaints can be submitted to the supervisor anytime during the whole period of hardship.

The supervisor must undertake speedy investigation of the facts if the case is under his or her responsibility and must make immediate notification to the complainant and the highest-ranking supervisor. If the complaint is beyond his or her responsibility, the supervisor must submit the case to his or her boss for investigation and consideration of the complaint no later than 15 working days after receiving it.



**Appeal**

Appeal can be made in case employees receive a letter of warning, or probation, or cancellation of increased compensation and the annual bonus by submitting a letter with their own signatures to the person authorized to consider the appeal within 15 days after receiving the order. With the exception of the order of termination of employment, the appeal can be submitted to the Board within 30 days. The consideration of the appeal must be finished within 30 days after receiving the appeal.

**Protection of the Complainant**

Employees who provide information, facts, or any proofs relating to the complaint or the person who considers the complaint in good faith, or both, will be protected by the company, although they may affect the company’s business. The company will provide such employees with the protection against termination of employment, punishment, or any harmful retaliation.

Incidentally, this year the company received no complaint or appeal from employees.

**💡 Engagement and Commitment of Employees**

The company’s executives regularly communicate with all employees through meetings, activities, as well as via electronic communication to inform them of its essential information and stimulate them to be aware of implications such as finance, investment, competition, society, environment, and ethics which may impact the company’s operation. This year the company organized a meeting between senior executives and all operational employees, as well as various activities destined to forge good relations and unity in the organization.

As for new employees, the company relies on orientation to foster their motivation and commitment of employees through meetings, study tours, and visits of the company group, as well as focus groups. This year the company organized 10 orientation sessions for new employees to advise them on work guidelines, acquaintance them with colleagues and the workplace, as well as providing them with the information on the company’s business. Moreover, the company organized two study tours, domestic and abroad, and held two meetings for discussions.

Moreover, the company has set up a welfare committee to encourage participation from employees and provide a channel for comments and creative discussion between the company and employees. The committee consists of two representatives from the employer’s side and six representatives appointed by the employees. The appointment is done every two years. Members who represent the employees are responsible for reflecting comments, recommendations, and discussions with the company in an effort to organize welfare activities appropriate to the current economic and social situations. This year the committee held four meetings. The issue that the employees raised and discussed with the company involved the improvement of hospitalization welfare. The committee presented recommendations to the management for consideration before approval at a later stage.



**💡 Recruitment and Retention of Highly Qualified Employees**

The company relies on employees with knowledge and specific expertise from several disciplines, since its business goals are now migrating toward integrated energy businesses. Therefore, the company has to recruit personnel with knowledge, competence, experience, and expertise, covering development, construction, machine operation, and maintenance of power plants with traditional fuels and renewable energy, survey and development of coal mines and other types of energy, as well as other supporting work in the same labor market and industry. As highly qualified employees are limited and in high demand in the market, the company has to look for personnel in other industries by providing application channels for everyone to have access to, with equal opportunities, such as the company website, printing advertisement and reliable job portal websites. Since the company's work is not appropriate to the disabled, the company contributes to the fund for the disabled workforce instead. Moreover, it is not the company's policy to hire labor force with lower than 18 years of age or illegal migrant workers.

Apart from recruiting outside personnel, the company is committed to developing skills and expertise necessary and essential to the company's operation in order to replace major positions in a timely way and continue work without interruption. This is to support the professional advancement of employees and help retain highly qualified employees. In 2014, the replacement of 19 positions took place which can be divided into 11 male employees and 8 female employees.

**💡 Merit Consideration based on Ethics**

Apart from performance assessment, the company values the competency assessment of individual employees in order to know if the employee's behavior is in line with the desired behavior as defined by the company's core values. The factors include reliability, responsibility, morals and ethics, search for opportunities and challenges to meet goals, teamwork within the organization and cooperation with external organizations. Therefore, on merit consideration, which includes compensation, appointment, and transfer, the company uses the employees' performance assessment and their competencies. The assessment result is reliable and fair, since MY HR system, the assessment system has been developed by a company with expertise in human resource management, well recognized by the business sector nationwide. All human resource management data of the company is also available via this integrated system.

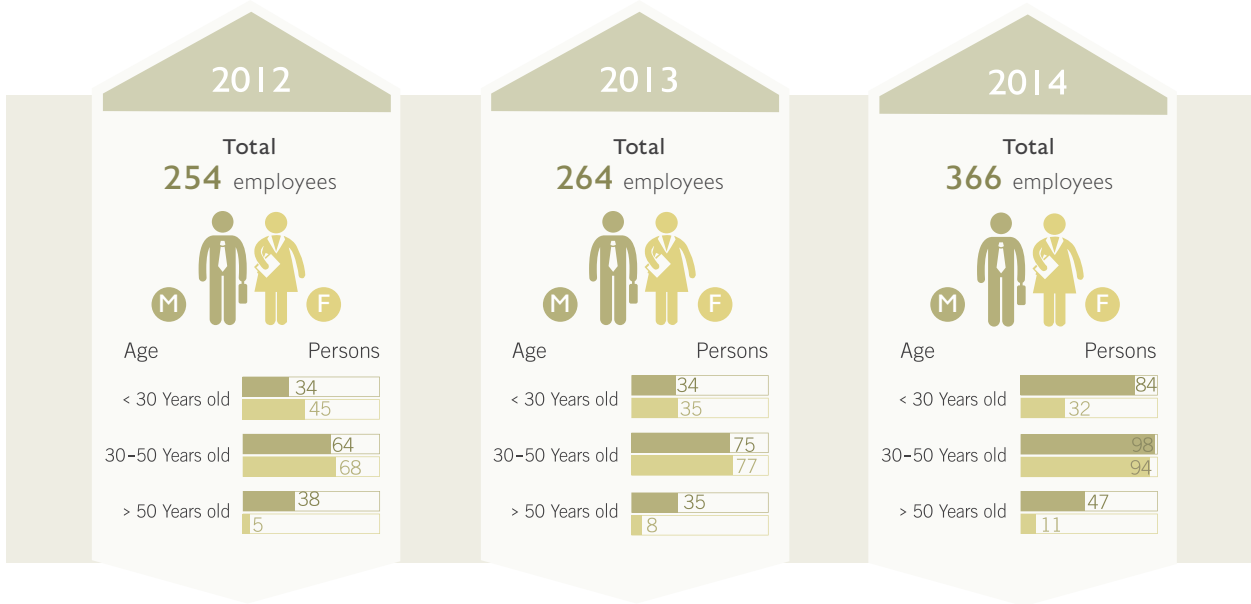
For the compensation consideration of senior executives, the company has announced its policy and criteria for the compensation of committee members and senior executives of the company group for clarity and fairness, taking into account the benefit of business operation of the company group in the long term and incentives to retain highly qualified employees. The compensation structure of senior executives is linked to the goals, performance of the company group, and assigned responsibilities.

The Replacement of Position in 2014

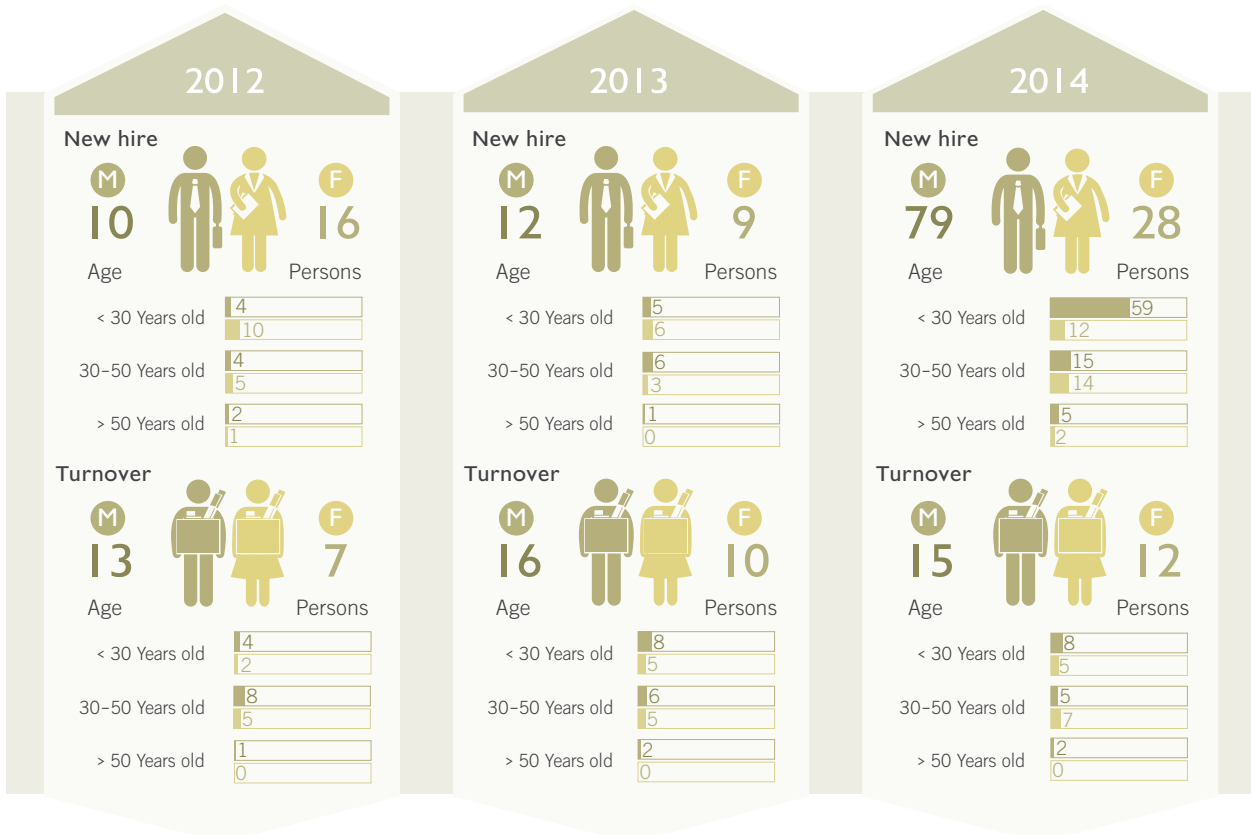
Gender \ Age		Age			
		30-39 Years old	40-49 Years old	50-54 Years old	Over 55 Years old
 Male		-			
					

## Personnel Data

### Total Employees

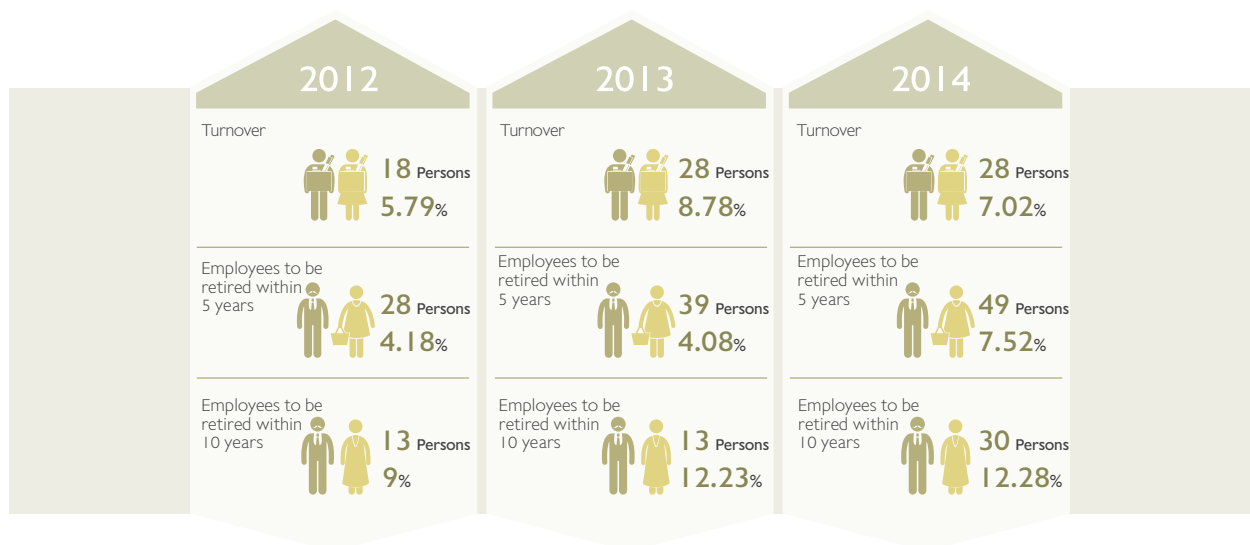


### New Hires and Turnover





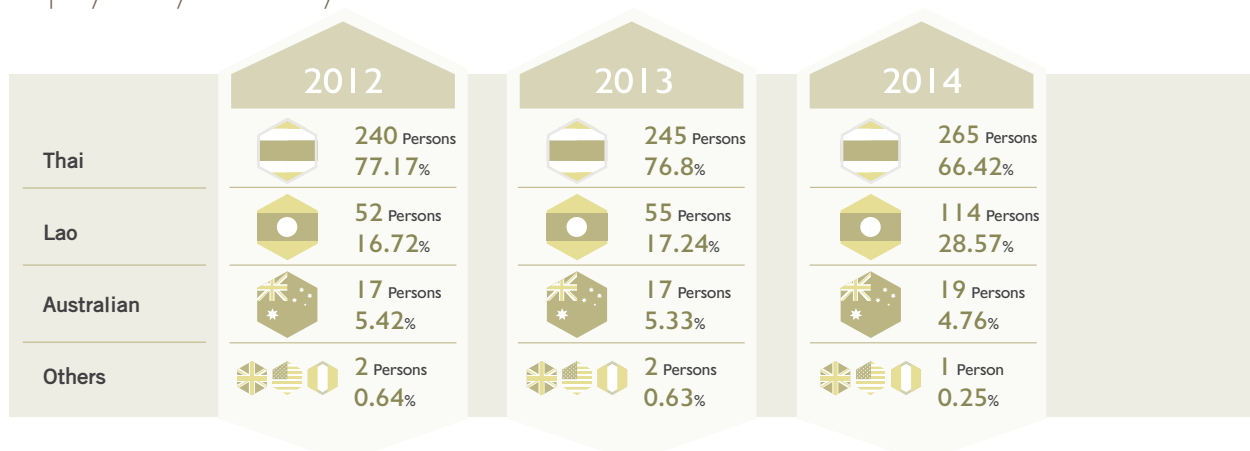
### Turnover and Retirement



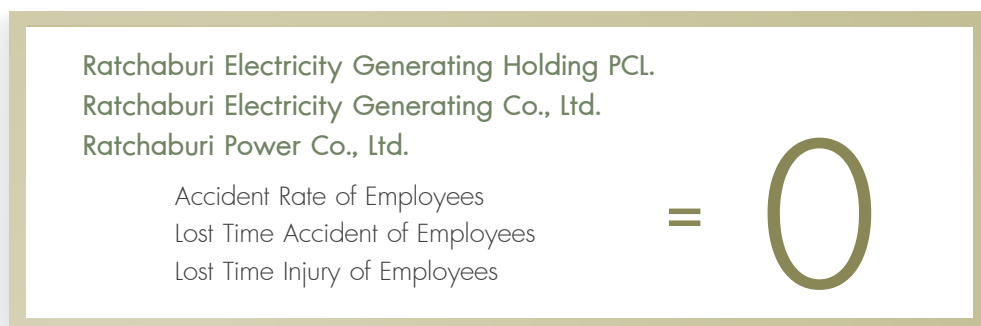
### Gender Equality



### Employees by Nationality



## Safety and Good Occupational Health in Organization



Safety, occupational health and environment in workplace are key factors supporting successful business operation and largely helping create reliability and acceptance from all stakeholders. Then, the company puts emphasis on promoting safety, occupational health and environment at workplaces and power stations by stipulating the policy on safety, occupational health and environment as guidelines for operation of trade partners, contractors, subcontractors, visitors, customers and communities nearby.

The company group established the Safety, Occupational Health and Workplace Environment Committee to be responsible for monitoring implementation of the safety policy and plan, preventing unsafety conditions in workplace and promoting employees' awareness on safety, safety-related campaigns as well as encouraging employees' participation in reporting unsafe conditions and operation as a part of their duties. The said committee

includes the chairman and members who are executives and workers (accounting for 50% of all members) as well as a safety officer at professional level. Monthly meeting between executives and worker member is regularly held, with minutes arranged to record the discussion.

The company commits to managing safety, occupational health and environment in workplace based on strictly compliance with law. Also, OHSAS 18001 occupational health and safety management system that is accepted internationally has been implemented at all power plants for preventing any injury and illness of all employees as per relevant law and standards. Occupational health and safety management system also gives the company an opportunity to work with customers showing a concern for safety and health of trade partners' employees as well as helping encourage workers to have safety attitude and to improve the workplace's safety.

### Work Safety

With the ultimate goal of "Zero Accident" at all workplaces and power plants, the company stipulates safety measures for employees, contractor, with regular monitoring to assure their compliance seriously. The company continues improvement of its safety measures in parallel with enhancing awareness of the employees on "Accident can be Prevented" through safety-related training and activities such as the "Drive Safely" program and the "Safety Moment" program normally organized prior to the company's meetings. Concerning the customer's

safety, particularly Electricity Generating Authority of Thailand, transformers and high-voltage transmission line system are always checked and assured they are in safe condition.

#### Safety Performance in 2014

In this topic, it covers performance of Ratchaburi Electricity Generating Holding PCL., Ratchaburi Electricity Generating Co., Ltd and Ratchaburi Power Co., Ltd, in which work safety and occupational health management is highly efficient.

“Zero Accident Campaign 2014” organized by Department of Labour and Protection Welfare, Ministry of Labour in order to increase employees’ safety awareness and promote safety culture.

Primary Level Certificate in recognition of zero accident control



Basic Fire Fighting Training for Employees. To create understanding about causes of fire, learn about best practice of fire suppression, and use of fire control equipment prepared in the office.



Ratchaburi-Power Power Plant in collaboration with Safety, Health and Environment Technology Center under Safety and Health at Work Promotion Association (Thailand) reassessed safety mitigation in the power plant operation to ensure that all safety aspects are completely complied with requirement of the law and regulations and in line with current situation. It resulted that some aspects have not been done and the Environment, Occupational Health and Safety Management Committee will further consider and put them in the implementation plan. The law compliance on safety is also audited by OHSAS 18001:2007’s external auditor biannually.

#### “RATCH GO GREEN@WORK 2014”

was organized to encourage employees to realize the significance of work and non-work safety that will be useful for their daily life. There were 132 employees participating in this event.



#### Best Suggestion Award 2014

It is feedback channel for encourage employees’ participation in informing risky areas and advising safety improvement in the workplace. In 2014, the number of suggestions increased by 3 times over 2013 and they were submitted to the Safety, Occupational Health and Environment Committee for further consideration.



## 2014 Key Performance

Plan	Operation
Safety-related training	<ul style="list-style-type: none"> <li>● A safety orientation program was arranged for all new hired employees, contractors and visitors.</li> <li>● The company arranged safety, occupational health and workplace environment training for employees and safety officers at supervisor level. The number of participants in this program was higher than the goal of 80%.</li> <li>● Ratchaburi-Power Power Plant continuously focused on road accident prevention and all primary causes of accident. All employees were required to attend “safely driving” training program that equipped them with safely driving based on international practice, needed driving skill as well as providing field practice for enhanced driving skill of car accident prevention. This activity is organized every two years.</li> </ul>
Raising awareness	<ul style="list-style-type: none"> <li>● <b>Safety Moment</b> was arranged at the beginning session of all meetings at the Ratchaburi Power Plant. All participants are allowed to give suggestion or opinions about the safety at work or in their daily life at least one issue.</li> <li>● <b>Heart of Caring Project</b> aims at increasing awareness of employees and contractors working in Ratchaburi-Power Power Plant. They were invited to give suggestions about accident prevention and safety guidelines. In 2014, there were 120 issues submitted and the power plant has already brought those issues into consideration for further action.</li> </ul>
Preparedness	<ul style="list-style-type: none"> <li>● All drivers visiting the company group area shall comply with the traffic signs. Meanwhile, all motorcyclists visiting the company area are required to wear helmets to reduce the accident rate.</li> <li>● For the emergency plan, the company organized biannual fire drills at day and night time. Aside from the annual Level 1-fire drill, Ratchaburi Power Plant in collaboration with external units organized Level 3-fire drill. At Ratchaburi-Power Power Plant, it organized Level 1-fire drill annually and Level 3-fire drill will be took place in 2015.</li> <li>● Stop Work Authority Program organized by Ratchaburi Power Plant is accident prevention measure mainly caused by safety carelessness of employees and workers. The employees who find out risky incidents that may lead to accidents can order to stop the operation. In 2014, there were six orders to stop the operation caused by unsafe job, misuse of equipment and risky actions.</li> </ul>

## BAR-AAR Program at Ratchaburi-Power Power Plant

Ratchaburi-Power Power Plant employs “Before Action Review” (BAR) and “After Action Review” (AAR) as tools for safety risk management. According to the analysis, most accidents arise from miscommunication that results to mistake in operation and affects production, equipment, environment as well as life. As a result, these procedures are applied to all activities that are risky, with high possibility to cause mistakes. There were 60 activities using these tools, such as observing carbon dioxide in the tank by thermo scan.

This project started in 2013 and last year it was applied to the maintenance works. The participants include workers and contractors.

### Goal:

To reduce the damage to person and equipment, the production stoppage, and environmental impact.

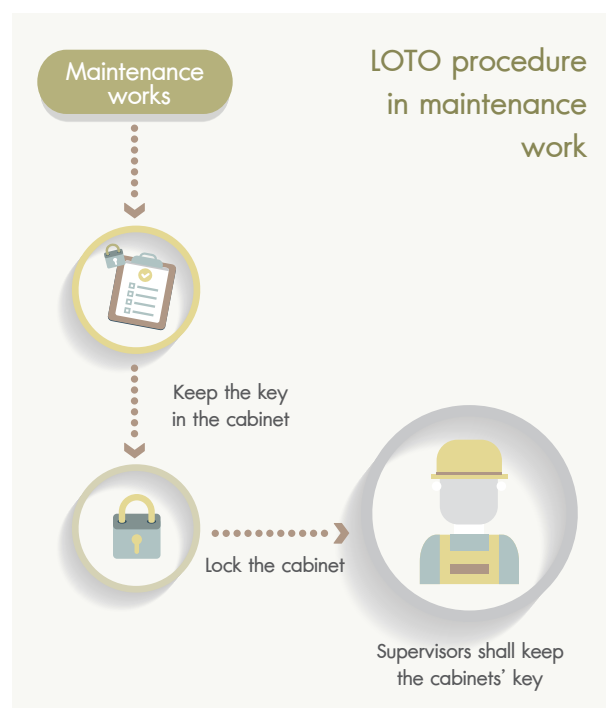
### Outcome:

In 2014, activities that employs BAR/AAR procedure can completely reduce all work accident and working risk.

## Lock Out Tag Out (LOTO) Project

Ratchaburi-Power Power Plant firstly used the Lock Out Tag Out (LOTO) system in 2014 for controlling equipment maintenance work and unplanned outage work in order to prevent accident that may affect workers. This system implemented for maintenance of equipment that have electric current, pipeline with steam pressure and gear machinery. LOTO will ensure that the equipment is locked and unable to use until the maintenance will be completed and the equipment is unlocked.

Ratchaburi-Power Power Plant employed LOTO for safety control of all maintenance works in 2014. Feedback and comments from workers will be used to improve LOTO system to be more user friendly, with better efficiency.



### Goal:

Reduce the possibility of accident for workers at maintenance work

### Outcome:

With LOTO system, no accident in maintenance work was occurred.

## Promotion of Employees' Good Health

The company group commits to promoting good physical and mental health for all employees, thus allowing them to work at fullest capability. The occupational health measures include preventing working risk, arranging decent workplace environment fitting to job and working postures, such as sitting, standing and movement and caring the employees' eyesight. Concerning employees' physical and mental conditions, the company considers and provided them appropriate work for enhanced their efficiency and effectiveness.

Issue	Goal	Operation
<b>Environment (Light, noise and air)</b>	<ul style="list-style-type: none"> <li>The environmental quality met the standard and regulations specified by Ministry of Labour governing safety, occupational health and workplace environment management relating to heat, light and noise (B.E 2549).</li> <li>The air quality was in line with the guidelines for good indoor quality in office premises (1996) of Institute of Environmental Epidemiology, Ministry of Environment, Singapore.</li> </ul>	<p>The company monitors and assesses the workplace environment quality twice a year and the result found that most area met the specified standard. The company also introduced corrective measures for the low quality environment area to assure decent workplace for all employees.</p>
<b>Sanitation</b>	<ul style="list-style-type: none"> <li>Fostering disciplines for personnel and create tidiness for organization</li> </ul>	<p><b>5s activities</b> has been continuously conducted. All employees has participated this activity which make the office clean and tidy.</p>
	<ul style="list-style-type: none"> <li>No drug workplace</li> </ul>	<p>Although there was no drug problem in the site and the head office so far, the company participated in the White enterprise Project by communicating and campaigning about the danger of drug for all employees.</p>
	<ul style="list-style-type: none"> <li>Cooling tower has no Legionella bacteria</li> </ul>	<p>The company group sent the example water from cooling tower to find out the <i>Legionella spp.</i> bacteria in water. According to the testing result, the quantity of these bacteria was at standard level.</p>
	<ul style="list-style-type: none"> <li>Disease Outbreak Prevention</li> </ul>	<p>Ratchaburi Power Power Plant prevented the disease outbreak by various measures. For example, if there are more than three workers having a flu, the office will be closed for cleaning by disinfectant cleaner.</p>

Issue	Goal	Operation
Health	<ul style="list-style-type: none"> <li>Monitoring and caring employees' health particularly those working in noisy zone</li> </ul>	Hearing Conservation Program: At the Ratchaburi Power Plant, the number of those having hearing loss at 15 decibel (A) at one of their ear was 32.61 % of the workers in noisy zone. To raise workers' awareness, the company has posted diagram of noise level at each area and announce a result of individual hearing ability test on the board. Also, all workers were required to wear the noisy preventive equipment while working in noisy zone.
	<ul style="list-style-type: none"> <li>Good nutrition based on sanitation</li> </ul>	The company arranged <b>Clean Food for Good Health</b> program, equipping employees with methods to consume clean food and to monitor contamination as well as promoting backyard garden for household consumption
	<ul style="list-style-type: none"> <li>Promoting employees' good health</li> </ul>	The company supported the establishment of sport clubs, such as golf club, petanque club, badminton club, running club, table tennis club, Yoga club etc.

### Activity: Health Care Record

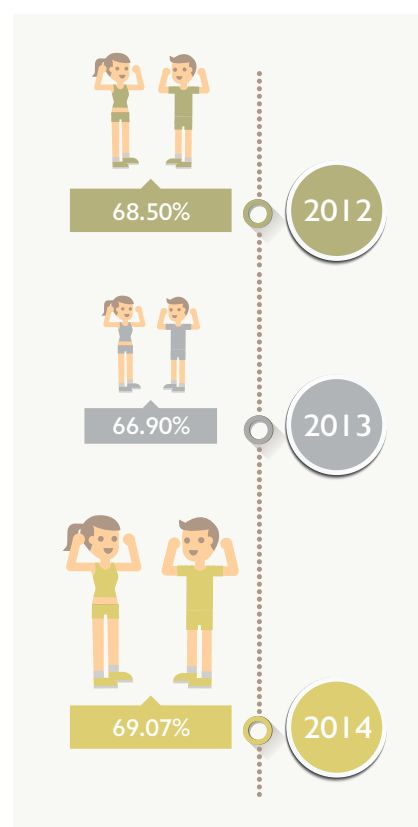
This project was firstly organized in 2014 by encouraging employees who have bally fat to control food, take exercise and be in good temper. Larger waist circumference indicates the obesity risk which will lead to other illnesses, such as hypertension, diabetes, heart disease, etc. This activity aims to change the behavior of risky group through encouraging them to regularly take exercise, concern about complete and balanced nutrition, have good mental health. This project is the collaboration with physicians at the power plant. The participants of this project receive a notebook for recording their routine activities, such as exercising, doing housework and eating. Then, the project committee will analyze the given information and calculate into calorie. Waist Circumference Record activity was well accepted by employees.

#### Target:

- More than 60% of female employees have less than 80-cm. waist and more than 60% of male employees have less than 90 cm. waist circumference.

#### Outcome:

The number of employees who have normal waist circumference increased to 70%





## Environment Responsibility

- ✓ Reduce CO<sub>2</sub> by generation efficiency improvement as well as energy and forest conservation.
- ✓ Develop approach on GHG reduction target setting within 2015.
- ✓ Reuse recycled water increasing 3.2%.
- ✓ Winning EIA Monitoring Awards for 4 projects from Office of Natural Resources and Environmental Policy and Planning.

## Greenhouse Gas Management for Dealing with Climate Change

The company group determinates to reduce greenhouse gas emission by focusing on direct and indirect CO<sub>2</sub> emission. The implementation includes energy saving in electricity generation process, initiating energy efficiency campaign for community's household and promoting natural carbon sink through expanding green area in the power plants, reforestation and community forest conservation in strategic locations nationwide.

Carbon footprint of  
1 kWh



Equal  
495 gCO<sub>2</sub>e\*

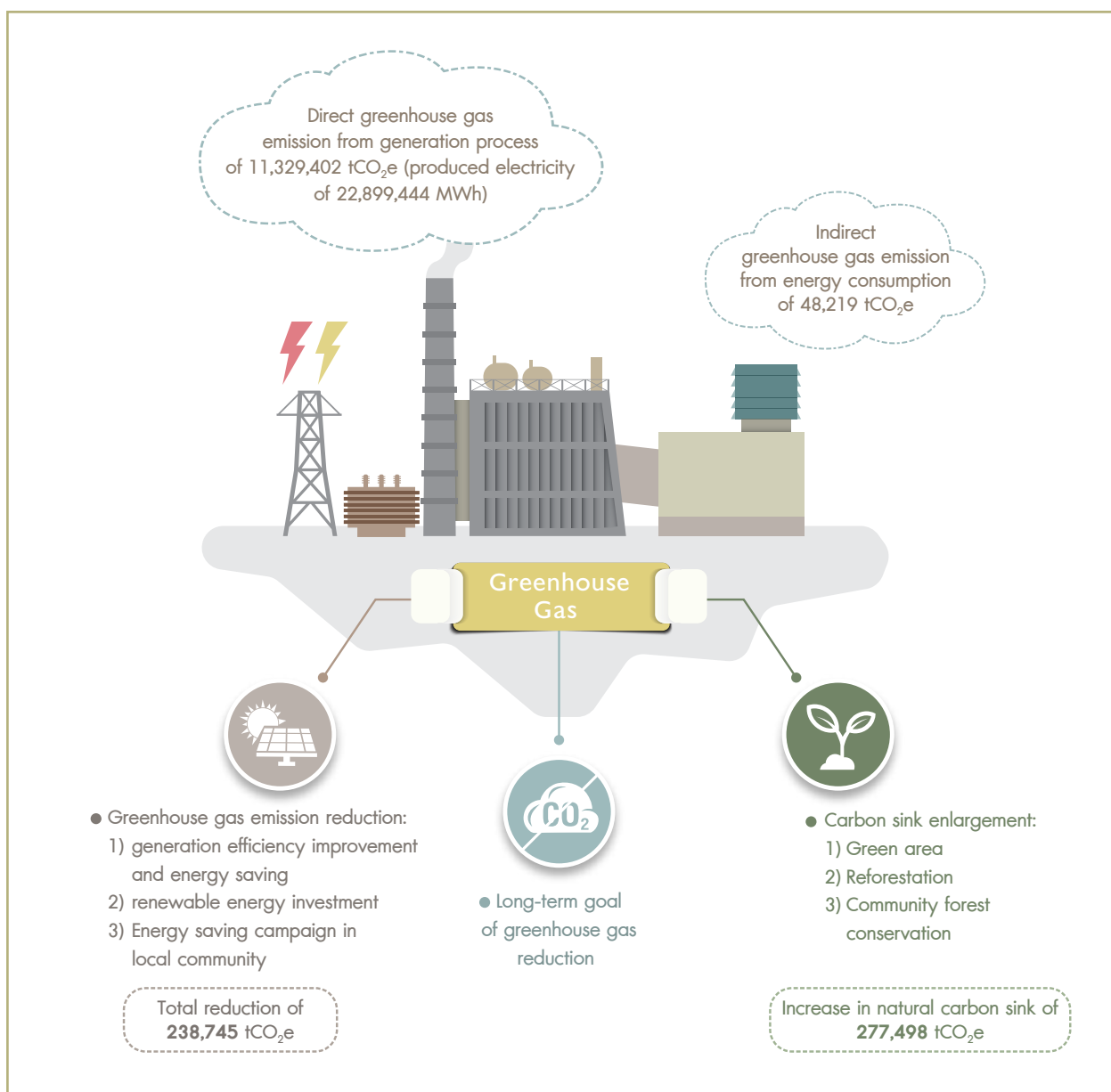
\*Average cumulative footprint of 3 main power plants (Ratchaburi Power Plant, Ratchaburi-Power and Tri energy) Only the direct greenhouse gas emission by stationary combustion was included.



## Greenhouse Gas Management

Placing emphasis on mitigating greenhouse gas emission, the company assesses volume of greenhouse gas released from operation of the company group and determines long-term target of greenhouse gas reduction expecting to finish by 2015.

In 2014, the company's three main power plants; Ratchaburi Power Plant, Ratchaburi-Power and Tri Energy fired 192,573 million cubic feet of natural gas, 86.1 million liter of bunker oil and 16.7 million liter of diesel in generating electricity of 22.9 million MWh. The generating process emitted 11.3 million tCO<sub>2</sub>e of greenhouse gas equivalent to greenhouse gas intensity of 0.495 tCO<sub>2</sub>e per MWh.



## Greenhouse Gas Emission Reduction

Greenhouse gas reduction initiatives were continuously carried out. The emphasis is placed on enhancing operation efficiency and saving energy in the power plants. Ratchaburi Power Plant, a main power generation source of the company group, formulates a five-year energy conservation plan (2013-2017) at target of 1,192 MWh. At the end of the plan in 2017, accumulated energy volume from the plant's initiative each year was projected to 3,576 MWh. In 2014, the plant achieved beyond its energy efficiency target at 715 MWh with actual energy saved of 4,881 MWh resulting from the generation efficiency improvement and energy consumption reduction.

### Generation Efficiency Improvement

In 2014, the company group implemented generation efficiency improvement and enabled to save energy of 4,652 MWh, indicating cost reduction of 9,768,702 baht and the greenhouse gas reduction of 2,425 tCO<sub>2</sub>e. The significant efficiency improvement in 2014 includes:

#### *Enhancement of Steam Turbine Cycle*

The steam turbine cycle efficiency enhancement was implemented for Ratchaburi Thermal Power Plant unit 1 and 2 by operating full scale of 20 cooling tower fans during 24.00-08.00 hours in order to maintain appropriate temperature in the cooling tower basin. It successfully reduces heat of 6,785,023 MJ per year, resulting to energy saving of 1,885 MWh per years, greenhouse gas reduction of 983 tCO<sub>2</sub>e and cost reduction of 5,600,000 baht per year.

#### *Fuel saving Project*

The initiative was conducted for Ratchaburi Thermal Power Plant unit 1 by transferring source of steam from Thermal Power Plant Unit 2 to Combined Cycle Power Plant block 1-3 which produced much heated steam. At the result, thermal power plant Unit 1 not only stabilized its warm condition, but also decreased steam production of 1,000 tons, equal to energy saving of 1,343 MWh per year, greenhouse gas reduction of 700 tCO<sub>2</sub>e, and cost reduction of 1,375,032 million baht per year.

### *Energy Saving from Change of Sampling Point*

This project is to save energy by changing the sampling point for measuring water quality. The sampling point is changed to 200 MW. in operation, from the previous sampling point of 300 MW. Then, the electricity consumption decreased by 240 MWh, equal to the greenhouse gas reduction of 125 tCO<sub>2</sub>e or cost reduction of 693,000 bath per each start up.

### Power Saving Campaigns

#### *Power Saving in the Power Plants*

In 2014, the company group undertook many projects and was able to reduce the electricity consumption of 15,960 KWh, equivalent to greenhouse gas reduction of 1,334 tCO<sub>2</sub>e:

1) Road Lighting Luminaire Changing Project: For the area around Ratchaburi Power Plant, the HID 250W lighting luminaires were replaced with LED 100W lighting luminaires which led to the cost reduction of 1,444,422 baht per year and greenhouse gas reduction of 254 tCO<sub>2</sub>e per year.

2) Air-conditioner System Improvement for the headquarter's building: This initiative can save power of 120 MWh, leading to cost reduction of 300,000 baht per year and greenhouse gas decrease of 70 tCO<sub>2</sub>e per year.

3) Lighting System Improvement: The HPS 1000 W and HPS 250W light bulbs at gas steam turbine compartment and entrance of Ratchaburi-Power Power Plant were replaced with LED light bulbs which can reduce electricity of 671 MWh per year, demonstrating to cost reduction of 2,927,716 baht per year, and greenhouse gas lessen of 390 tCO<sub>2</sub>e per year.

### Energy Saving at Head Office

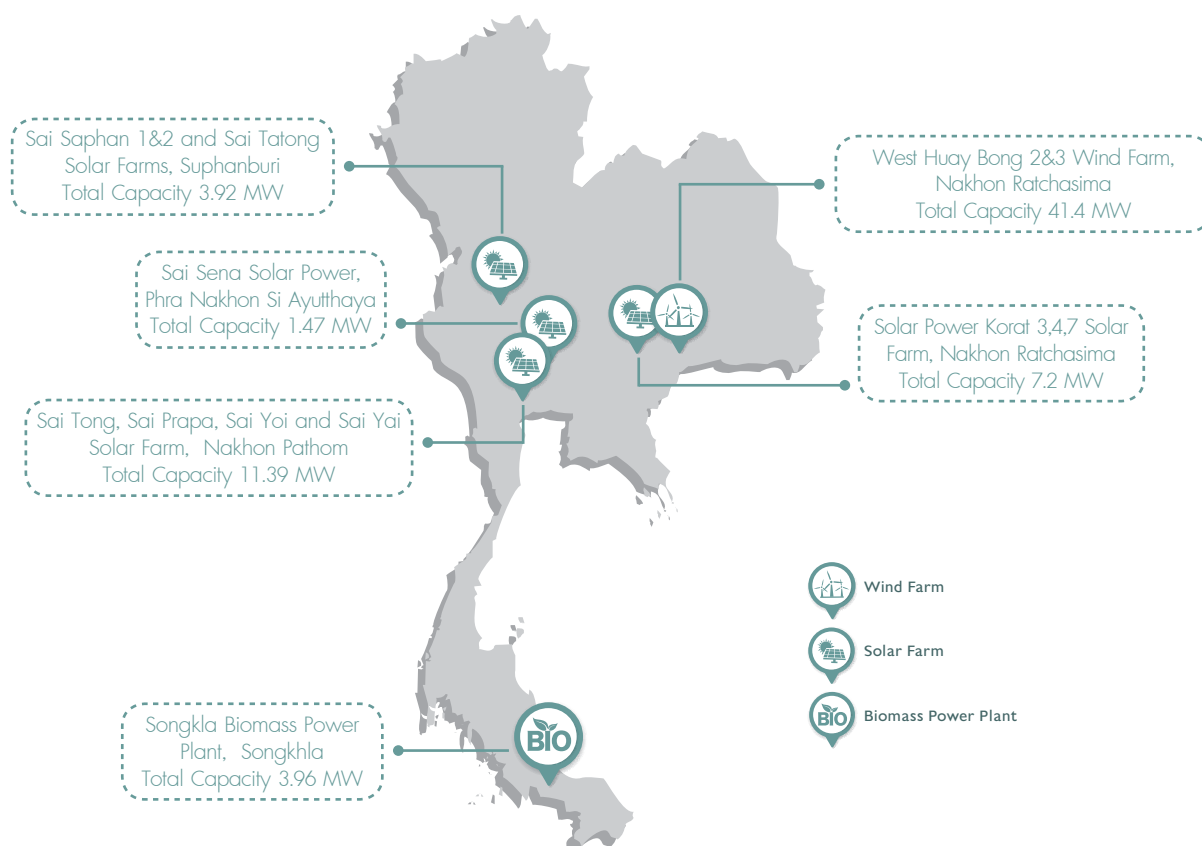
Organized power efficiency campaign aims to lessen electricity consumption and office supply usage by 10% compared to 2013 performance. Employees were encouraged to learn more about ways of energy and resource utilization in their work process. To this end, the company's electricity and water consumption decreased by 571 MWh and 5,105 cubic meters, lower 21% and 19%

from 2013 respectively. It indicates greenhouse gas reduction of 332 tCO<sub>2</sub>e and administration expenses lower by 1.98 million baht in 2014. This reflects to our achievement in resource and energy saving at target of 10% from 2013. The implemented program included Green Office project and MEA Energy Saving Building program.

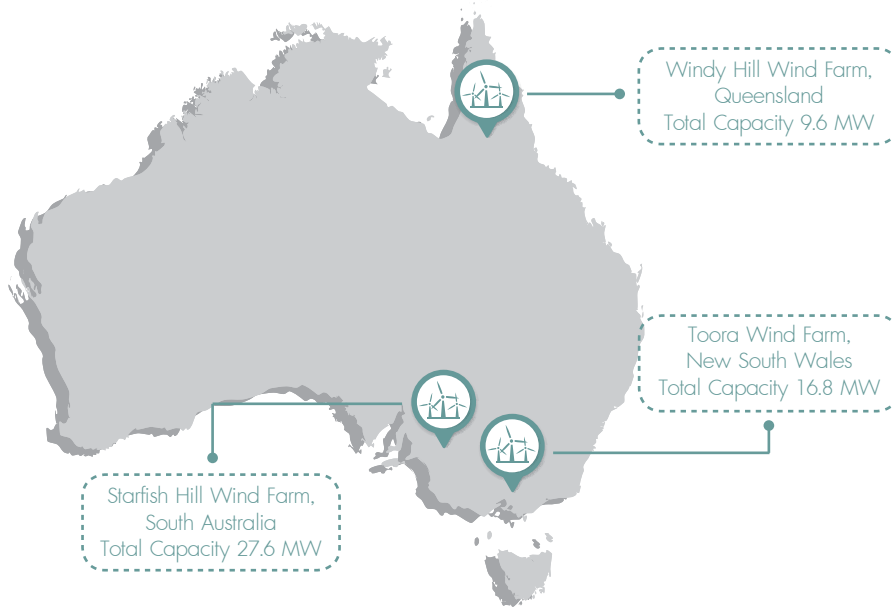
### 💡 Power Generation from Renewable Energy

In 2014, the company's capacity of renewable projects in and outside Thailand totaled 143.45 MW, reducing oil consumption of 76.4 million liter per year, and greenhouse gas of 226,029 tons tCO<sub>2</sub>e. The company targets to increase renewable capacity domestically and internationally to 500 MW by 2017.

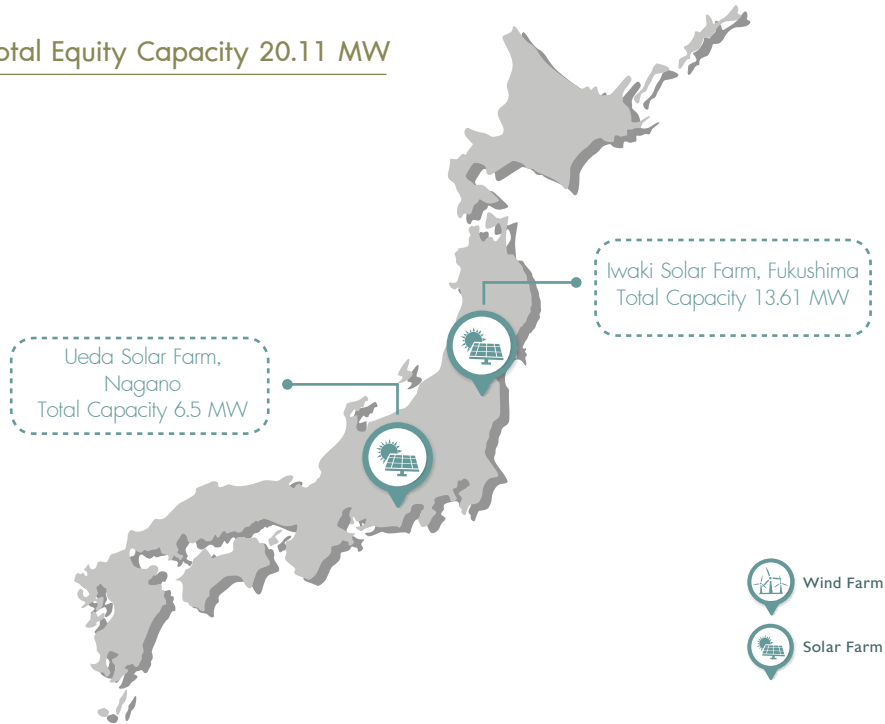
### Thailand: Total Equity Capacity 69.34 MW



Australia: Total Equity Capacity 54 MW



Japan: Total Equity Capacity 20.11 MW



### Reduction of Trade Partner's Greenhouse Gas

Determined to reduce indirect greenhouse gas, the company prefers joining hands with trade partners that operate business concerning environment responsibility policy since 2013. It applies to green procurement as realizing that it will help relieve environmental impacts and climate change.

The company mostly procures spare parts and equipment of power plants from world-class manufacturers who committed to environment care and social responsibility. Products and services certified by environmental management standard are also selected. This method helps the company reduce indirect greenhouse gas and support green procurement target of 25% by 2017.

### Promotion of Greenhouse Gas Emission in Local Communities

The expansion of community energy project under the collaboration of the company and Provincial Energy Office aims to support energy efficient appliances, such as energy saving light bulbs and high-efficient stove which started in 2011 at Tharab Sub-district, Muang District; Ban Singha Sub-district, Bodharam District, Ratchaburi Province as well as community forest in the province. In 2014, this project is expanded to another three sundistricts including Nam Phu Sub-district, Muang District, Ratchaburi; Thamai Ruak Sub-district, Tha Yang District, Phetchaburi province and Nong Rong Sub-district, Phanom Thuan District, Kanchanaburi province, with energy saving target of 5% of each location.

The project offers 242 appliances for 234 households and 8 vocational groups. For Ban Singha Sub-district, Tharab Sub-district and community forest, there were 46 appliances offered, which can reduce heating value of 708,175 MJ per year from biogas use, efficient wood-burning stove and high heating stove. Greenhouse gas reduction of 76 tCO<sub>2</sub>e resulted from energy saving and less LPG consumption. The efforts enabled cost reduction of 38,880 baht per year. Progress of three new locations is under data collection of community energy consumption, which is expected to be finished in 2015.



Solar home project at Ban Hua Ha, Mae Hong Son is conducted under Voluntary Emission Reduction Program developed by Thailand Environment Institute following the guideline of Thailand Voluntary Emission Reduction (T-VER). The initiative supports the installation of solar panels for 25 households which can reduce the greenhouse gas by 8.48 tCO<sub>2</sub>e per years. The Hua ha village will gained carbon credit valued at 41,500 baht a year bought by the company for 5 years. The carbon credit income managed by community committee is collected in forms of village fund using for maintenance of the solar panels. The co-benefit from greenhouse gas reduction is also included in carbon credit value.

### Foster Awareness for Behavioral Change

For increasing awareness and encouraging the behavioral change in energy and natural resource utilization to alleviate the climate change, the company organized many programs for employees and stakeholders, such as youth camps and community forest leader network seminar under the project of "Love the Forest and the Community". This environmental care project help create understanding toward the use of energy and natural resource as well as increasing the participation of the youth and forest community leaders in forest conservation for enlarging carbon sink.

After the activity, 412 employees, youth and community forest leaders have a good understanding toward the proper utilization of energy and natural resource. Aside from changing behavior relating to the use of energy and natural resource, 63% of youth participating in Klayim youth camps implemented their brainstormed environment care initiatives in their community, such as mangrove plantation and waste separation for recycle which will help reduce the greenhouse gas emission and enlarge the carbon sink.

## Increase in Carbon Sink

In addition to direct and indirect efforts to reduce greenhouse gas, the company also promotes a project to continuously enlarge the carbon sink or carbon offset. The project implemented in power plants included effort to enlarge green area in vacant area. Meanwhile, other projects operate outside the power plants were the “Love the Forest and Community” Project, activity to strengthen community forests in Ratchaburi province, a project of planting trees in upstream forests to create carbon sink area in Nan of 138,749 rai enabling to store carbon of 277,498 tCO<sub>2</sub>e.



## Long-term Greenhouse Gas Reduction Plan by Power Plant

In 2014, the company starts development of long-term greenhouse gas reduction plan for fossil fuel-fired power plants (99.99% shareholding) introduced by Ratchaburi Power Plant and Tri Energy. It is under studying relevant data in order to assess the plant’s reduction capability of greenhouse gas and link the target into the company’s strategy plan. This effort is expected to be finished in 2015.

In addition, Ratchaburi Power Plant participates in Thailand Voluntary Emission Trading Scheme (T-VETS) organized by Thailand Greenhouse Gas Management Organization (TGO) in collaboration with Chula Unisearch,

Chulalongkorn University. Under the scheme, the plant will apply Measurement, Reporting, and Verification System (MRV) and operational regulations of T-VETS for reviewing its greenhouse gas management. This participation is in line with the company group’s long-term greenhouse gas management goal and reflects the company’s commitment in supporting the greenhouse gas reduction plan of the country under United Nations Framework Convention on Climate Change (UNFCCC). Thailand has implemented greenhouse gas reduction to reach specified goal in 2020 onwards.



### **Interview : Greenhouse Gas Management Approach of Power Plants** **Mr. Somnuk Jindasup: Chief Asset Management Officer**

“The company group committed in sustainable power management depending on three main pillars namely; 1) stability of power grid 2) fair electricity tariff 3) Environment-friendly operation and community care. The company realizes that the greenhouse gas partially emitted by fossil fuel-fired power plant results in climate changes. The company places two approaches for minimizing the greenhouse

gas which are increase of natural carbon storage by supporting community forest and reforestation, and improvement of the power generation efficiency and energy conservation.

Throughout 14-year operation, the Ratchaburi Power Plant, a large power generation source of the company, has continued to improve the generation efficiency with contributing investment over 1 billion baht assuring EGAT on its availability efficiency and power deliver as specified in the purchase agreement. Our effort enables to not only enhance generation capability and reduce the energy up to 4-8 million MkWh, but also decrease greenhouse gas eventually. This reflects the company’s intention to secure and sustain national power system.”

## Risks and Opportunity from Climate Change

Climate change is a cause of natural disaster, particularly flooding and drought that are now intensified, with greater impacts to life quality and environment. The company realizes and takes into account the said issues as a part of risk management to prevent any impact to business operation. For the power plant development, the company normally assesses environmental and social impacts in all dimensions as well as designing project to cope with natural disasters, such as flooding, drought and earthquake in order to maintain distribution availability and prevent financial damages.

In 2014, the Risk Management Committee took climate change issue into consideration, particularly for new project development and advising measures to prevent problems for commercial operated power plants. The company also tailored risk management guidelines for each power plant in order to prevent climate change impacts that possibly affect future growth and business sustainability.

### Water Risk Management

The company continued to monitor the water situation and statistics of the raw water source for its main power plants, including Mae Klong river basin in Thailand and Ngum river basin in Lao PDR, with managing risk methodology described below:

### Managing Flooding risk

The company assesses the risk factor since the project location selection through studying geographical and historical data of the project location and potentiality for designing and planning the project area. All power plants are required to build the drainage system around the project location, raw water reservoir, storm drain pond as well as berm to prevent flooding around the power plants. This are regarded as the corrective and preventive measures for lessening environmental impacts as specified in EIA. According the massive flooding in 2011, the power plants of the company groups located in central basin have already improved and added the preventive measures.

### *Commercial Operated Power Plants*

Ratchaburi Power Plant and Ratchaburi-Power arranged an emergency plan manual to cope with flooding. Relevant persons were trained and informed of their responsibility when facing the incident in order to solving problem in effectively and timely manner. The drill was periodically organized in order to enable the power generation continuity. In 2014, there was no incident affecting the power generation.

### *Power Plant under construction*

Two units of 117-MW Ratchaburi World Cogeneration located in Ratchaburi industrial estate encounter flooding risk by studying and assessing impacts towards its operation and business in 2013. It then installed underground and on ground flooding prevention system during April and August 2014. Soil cement system was employed to prevent underground water, with pumping system for flooding drainage. For the ground work, 2-meter levee was built to prevent flooding in the project location. This levee was raised around 0.5 meter from the highest level of previous massive flooding. Thus, levee's height reaches 6.5 meters from sea level. The operational budget amounting to 50 million baht was provided to support the power generation continuity as well as reduction of flooding insurance cost. This prevention will also help enhance the confidence for stakeholders towards the company group's power generation.

### Managing Drought Risk

According to the assessment of drought risk of power plants located in Ratchaburi, it showed that water volume of Mae Klong River has no signal of shortage due to the abundance of the upstream forest. The water volume is still able to support both community and agricultural sector as usual. For hydroelectric power generation, the company employs the rule curve system in order to cope with flooding and drought risk for efficient planning short- and long-term power generation plan as per the PPA.

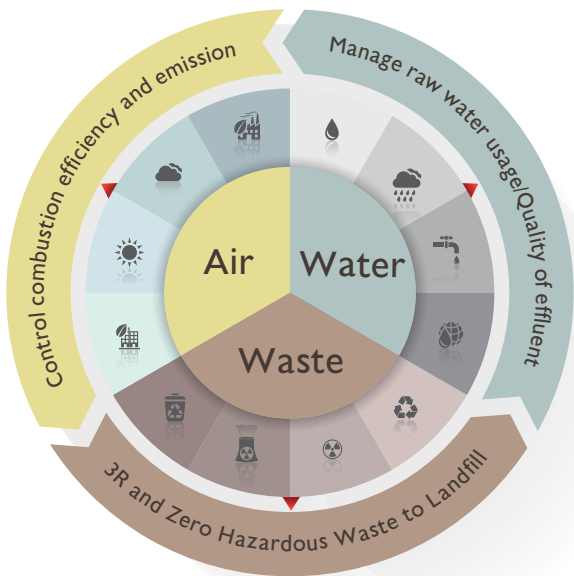
### *Commercial Operated Power Plants*

For the power generation of Nam Ngum 2 Power Plant in Vientiane, Lao PDR, it was found that the water volume was unstable and the operation may be affected by the drought. According to PPA, it allows the plant to request for ceasing operation when the water volume is not adequate for generating power (at the lowest rate required by PPA) and it can made requests 2 times in advance throughout PPA. However, the power plant has implemented upstream water management by jointing hands with Ministry of Energy and Mine, Lao PDR by specify an action plan and budget as well as monitoring annual performance. This is regarded as the long-term water shortage risk preventive measures.

### *Under Construction Power Plants*

Lignite-fired 1,878 MW Hongsa Power Plant in Lao PDR that is under construction currently proactively managed water shortage risk due to limitation of Nam Luek dam water volume of 16.4 million cubic meters slightly being risky to water conflict with community. As a result, the plant finds alternated supply of water source of 19 million-cubic meter Nam Khan Dam. Water will be distributed by pumping system which was set up at the power plant construction stage. This water source management is the collaboration with government sector which helps secure power generation and prevent any impact for the community's water consumption.

## Environmental Footprint



On the part of environment and community responsibility, the company group continues to put the best effort to maximize generation efficiency in order to minimize environmental impacts. Realizing that the power generation generally involves the consumption of natural resources and causes impacts to the environment and society overall even though electricity is generated for serving national economic and social development, the company, then, pay seriously attention to fuel combustion efficiency in order to manage air quality at legal accepted requirement. Water management by

optimizing raw water and treating quality of effluent before discharging to the environment is also our priority. Meanwhile, waste management is carried out through reducing, reusing and recycling, with an aim to achieve to zero hazardous waste to landfill.

The company's power stations strictly comply with relevant environmental law and regulations of every countries where operated and also implement environmental impact mitigation and protection measures approved by relevant authorities. The facilities continuously conduct environmental quality monitoring and report the performance to the said authorities as per the timeline specified by laws. In 2014, the power plants of the company group in Thailand and outside completely complied with relevant environmental law and regulations. Thus, there was no issue about legal compliance and fines charged the company.

Responding to our mission of world-class operational excellence and environment and social responsibility, the company group has employed environmental standards into operational process with an aims to enhance efficiency and effectiveness of environmental quality management system. This action eventually brings us confidence and acceptance of stakeholders domestically and internationally. The standards implemented in the company group are following below:



Operation	ISO 14001	OHSAS 18001	CSR-DIW	Green Office	Energy Saving	Thailand V-ETS	3R & 5S.
Head office				✓	✓		✓
Ratchaburi Power Plant, Thailand	✓	✓	✓		✓	✓	✓
Tri Energy Power Plant, Thailand	✓	Expecting to certify the standard in 2015			✓		✓
Ratchaburi-Power Power Plant, Thailand	✓	✓			✓		✓
Ratchaburi World Cogeneration Power Plant, Thailand	Planning to implement and certify the standard within Nov. 1, 2016						✓

## Environmental Quality Management at Power Plant

Fuel and water are essential materials for power generation. The main power plants of the company group in Thailand, including Ratchaburi Power Plant, Tri Energy and Ratchaburi-Power, with total equity capacity of 4,695 MW, use natural gas as primary fuel which imports from Yadana and Yetagun fields in Republic of the Union of Myanmar. Meanwhile, bunker oil and diesel oil, secondary fuel, were reserved for thermal power plant and combined-cycle power plant respectively. Due to different type of power plants, environmental quality management measures are varied particularly in air quality management.

Under the ultimate goal to generate electricity based on environment- friendly process and resources utilization, each power plant has appointed the Environment Management Committee and Environment Working Group to be responsible for supervising and monitoring plant's operation and maintenance, and assuring completeness of legal and the company's rule compliance. Also, mitigation measures of air emission, water and waste must be performed efficiently and effectively.

## Air Emission and Waste Management

### Air Emission

The company group strictly controls air emission from power plant within the legal accepted requirement. Pollutants arising from combustion process including nitrogen oxides, sulfur dioxide and particulate matters are well managed by emission controlling system as described below.

#### Air Emission Prevention and Controlling Technology of Combined-Cycle Power Plant

- Nitrogen Oxides (NO<sub>x</sub>) arisen from firing natural gas is minimized by the Dry Low NO<sub>x</sub> burners. In case of diesel firing, a secondary fuel, the demineralized water will be

sprayed into the combustion compartment to lower temperature at level that prevents occurrence of the oxidization of nitrogen.

#### Air Emission Prevention and Controlling Technology of Thermal Power Plant

- The power plant's combustion system equips with a Low NO<sub>x</sub> Burner and the Flue Gases Re-circulation technology that ensures low nitrogen oxide emission level.
- The Flue Gas Desulfurization System (FGD) is installed when the bunker oil are fired.

### Air Quality Monitoring System

- The power plants install the Continuous Emission Monitoring Systems (CEMs) at all power stacks ensuring pollutants are controlled at legal required level.

- The power plant established five air quality monitoring stations equipped with the Ambient Air Quality Monitoring Systems (AAQMs) at the community surrounding Ratchaburi Power Plant and Ratchaburi-Power.

The emission prevention and controlling system as well as the air emission monitoring system at all power plants was designed and installed at beginning of project development and construction. The systems were regularly verified its exactness of data, and maintained as per specified work plan. The said process helps assure the emission management efficiency and air emission level within legal requirement. In cases of air emission abruptly higher than legal standard,

the alarm in the control room will alert the operators to recheck the said systems and then National Control Center will be informed and asked for reducing power production or stop the operation until the emission controlling system is recovered to operate efficiently and emission controlled at the legal specified requirement.

In 2014, the average concentration of emission released from Ratchaburi Power Plant was lower than minimum legal requirement according to the Ministry of Industry's notification (B.E. 2547). It resulted from natural gas mostly used for generation. In case of Ratchaburi Thermal Power Plant's generation by bunker oil, emission was controlled by Flue Gas Desulfurization System (FGD) which is continuously maintains its SO<sub>2</sub> removal efficiency at 97.3% (better than its installed efficiency of 97.2%).

List of plants	Average concentration value of pollutants released from Power Plants				
	NO <sub>x</sub> (ppm)		SO <sub>2</sub> (ppm)		Remarks
	Gas	Oil	Gas	Oil	Oil Type (Alternated Fuel)
Ratchaburi Thermal Power Plant	10.90	63.81	0.53	17.32	Bunker Oil
Ratchaburi Combined Cycle Power Plant	20.98	85.79	1.32	6.73	Diesel Oil
Tri Energy Combined Cycle Power Plant	26.70	110.69	0.09	36.00	Diesel Oil
Ratchaburi-Power Combine Cycle Power Plant	45.97	-	1.07	-	Diesel Oil
<b>Standard Value</b>	120	180	20	320	-

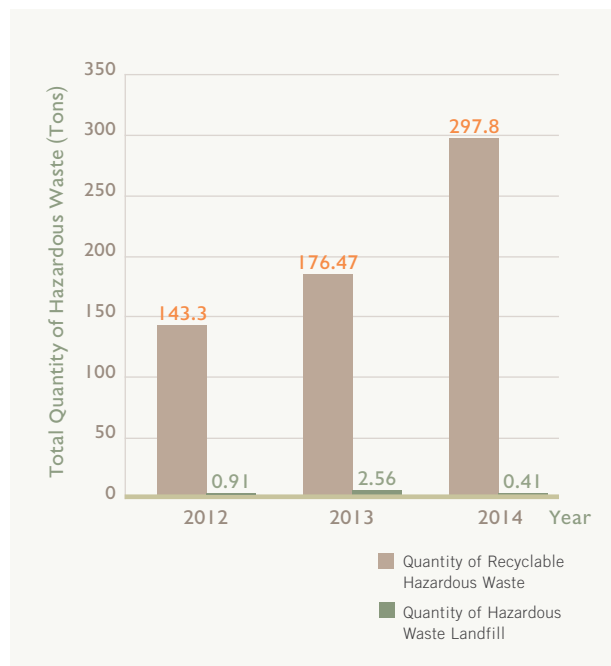
### Waste Management

Placing emphasis on waste recycling for maximized environment and social benefits, the company hires authorized waste management service providers following the recycling method specified in the Ministry of Industry's notification. The company closely surveillances waste disposal operation of the hired service provider and its subcontractor at their places to ensure that waste was correctly and appropriately managed according to specified disposal methods required by relevant law.

For garbage and recyclable waste, the local administration agency is hired to manage them according to the sanitary standard. Gypsum waste from desulfurization process is disposed at the power plant's landfill site lining with High Density Polyethylene (HDPE) sheet at the bottom and then distributed to cement manufacturing's suppliers later. Meanwhile, underground water around the landfill is monitored and assessed every six months.

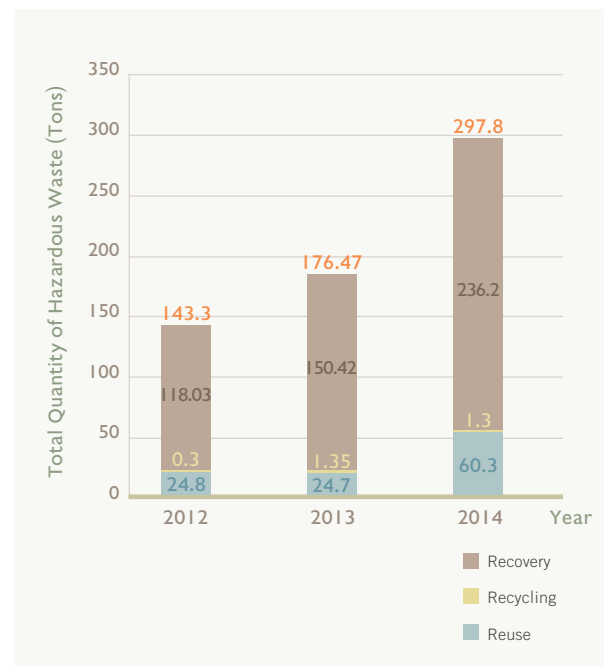
In 2014, the main power plants of the company produces total waste of 10,444 tons including non-hazardous waste of 10,146 ton and hazardous waste of 298.21 tons divided into 297.8 tons of recyclable hazardous waste and 0.41 tons of secured landfill. In 2015, the company aims to achieve zero hazardous waste landfill.

### Comparison of Hazardous Waste Disposal



Remarks: Hazardous waste data of annual maintenance of Ratchaburi Power Plant and Ratchaburi-Power Power Plant

### Proportion of Hazardous Waste Recycling



## Water Management

Water is a substantial material for power generation and water management is our priority. The company works closely with the plant's operator to observe water usage volume in generation process. The company also puts the best effort to managing raw water supply insufficiency and wastewater quality aiming to maintain power generation and business continuity. It seriously finds ways to use less water in generating process in order to avoid water conflict with community and discharge quality treated water to natural waterway to protect environmental impact.



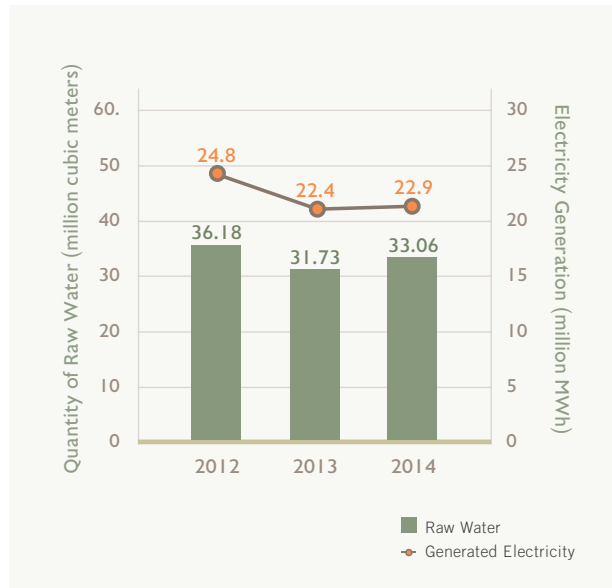
### 💡 Reduction of Water Usage in Power Generating Process

Realizing that high volume of water used in power generating may affect the water consumption of community and ecology system, the company has closely monitored data of water usage volume in power production process and assessed possible environmental impacts. Presently, it is found that Ratchaburi Power Plant, Tri Energy and Ratchaburi-Power supply raw water from Mae Klong River, with a quantity of 33.06 million cubic meters representing 1.2% of total water volume of the river. Due to abundant water volume of the river, community is not affected from the plants' consumption as well as ecology system and the data shows that since 2001 water resource has been capable to support the plants' operation without any conflict with community.

The cooling system requires relatively high water quantity of up to 75% of the entire water quantity required in production process. As a result, all power plants try to find way to use cooling water as much as possible for reducing the use of natural water. To this end, the plants achieve target of 4-6 cycles (for acidic system) and 3-4 cycles (for basic system) before discharging it to the holding pond. Also, the ratio of water usage volume to the power generating capacity is another indicator leading the power plants to research for new methods of water reuse and wastewater quality improvement for recycling at plants.

In 2014, volume of reused water using in the plants excepting to cooling system increased to 973,702 cubic meters representing 3% of total raw water and higher than last year performance at 2.8%. This initiative compliments to the plant’s power saving due to less water pumping and wastewater discharge.

Quantity of Raw Water Used for Electricity Generation



Number of cycles of water reused in the cooling system, 2012-2014

Power Plant	2012	2013	2014	Acidic or Basic System of Cooling Tower
Ratchaburi Power Plant	3.08	3.16	3.12	Basic
Tri Energy Power Plant	5.41	4.46	4.50	Acidic
Ratchaburi-Power Power Plant	4.32	4.44	4.29	Acidic

Remarks: Ratchaburi Power Plant is researching for cooling system improvement from basic to acidic system in order to increase cycle of cooling water reuse.

**Effluent Quality Control and Treatment**

Wastewater mainly outputs from electricity generation process and the sanitary. Most volume of wastewater comes from process of heat exchange in cooling system. The type of wastewater is treated by process of sedimentation and temperature lowering to environment level and managed its quality control according to legal requirement before discharging to a natural waterway. This method is able to minimize impacts toward biodiversity of public water resource. The wastewater outputs from the building is also well treated to reach the quality standard of legal requirement and then it was reused for garden watering

system. The quality of effluent at the key power plants in 2014 was higher permitted standard stipulated by the Ministry of Industry and the Royal Irrigation Department.



Power Plant	Type of Wastewater	Quantity (Cubic Meters)	Management	Public Water Resource
Ratchaburi Power Plant and Ratchaburi-Power Power Plant	From electricity generation process	4,338,135	1) Water from cooling system- Sedimentation and temperature reduction. 2) Acidic/basic wastewater - Neutralization 3) Oily wastewater - Water/oil separation All types of wastewater discharged to holding and retention pond.	Khlong Bangpa (Irrigation canal) flowing through Mae Klong River
	Sanitary	120,120	Wastewater is treated by aeration system and ensured that its quality meets legal standard before watering trees in the plant.	No discharge to the environment
Tri Energy Power Plant	From electricity generation process	687,684	1) Water from cooling system- Sedimentation and temperature reduction. 2) Acidic-basic wastewater - Neutralization 3) Oily wastewater - Water/oil separation All types of waste water discharged to holding and retention pond.	Mae Klong River
	Sanitary	1,274	Wastewater is treated by aeration system and controlled its quality to meet legal standard before watering trees in the plant. Its implementation started in August 2014.	No discharge to the environment.

## Environmental Quality Management Recognition

Due to earnest environmental management, Ratchaburi Power Plant, Tri Energy Power Plant, the bunker oil transmission project for Ratchaburi Thermal Power Plants unit 1 and 2 and RATCH Group Building were recognized by “Outstanding Award” for Enterprise complying with EIA Monitoring Awards 2014 which was organized by Office of Natural Resources and Environmental Policy and Planning. In addition, Ratchaburi Power Plant, Tri Energy and Ratchaburi-Power were successfully certified ISO 14001 standard in 2002, 2003 and 2009 respectively and consecutively.



## New Project Development and Environmental Stewardship

New project development is the key work plan driving the company to be a leading value-oriented integrated energy company in Asia-Pacific. For power plant development, the company has been strictly complied with the law, particularly quality of EIA arrangement that must be in line with criteria, methods and regulations specified by relevant units. The stakeholder inclusiveness is important mean to hear opinions and concerns about the company's activities. Concerned stakeholders include all parties around the project such as community member, educational institutions, public health and religious organizations, local administration bodies, local academics, non-profit organizations, local opinion leaders, vocational groups as well as national, regional and local governmental agencies.

There are many channels provided to receive local opinions, such as a formal meeting, focus group consultation, informal dialogue, interview and questionnaires. Emphasis is placed on the project's environmental, social and economic impacts as well as the mental impact. Stakeholders strongly expect the company in preventing operational impact seriously and caring of their concerns especially on air emission and water management. The company takes the said issue into account for specifying the specification of power plant machinery and technology as well as environmental quality control and prevention system that meet the world-class standard. The issue concerned is also considered for formulating environmental impact prevention and mitigation measures for the EIA report, such as specifying the number of water reusing cycle at cooling towers in order to reduce water use from natural water resource preventing water conflict with the community.

The economic and social impacts from the project are also important issues towards the communities and stakeholders' opinions, especially benefits generated to the community and local people. Efforts to greater support

local communities includes implantation of a community development plan based on local needs, company registration in location of the project, local employment and procurement as well as contribution to the power development funds according to generation volume and types of fuel. Nevertheless, all measures must be accepted by relevant stakeholders, thus supporting the success of new projects as specified in work plans.

The EIA reports of new projects must be approved by the supervisory and local units before asking for business license and starting project construction. All projects, during the construction and operation period must be complied with the environmental impact prevention and mitigation measures as well as the environment quality monitoring measures specified in the reports until expiry of the project. For international projects, the company follows the said practices as basic guideline and adjusts to suit the law and regulations of each country.

During the past five years, the EIA reports of six projects have been approved by the relevant authorities:

- 1) 1,878-MW Hongsa Thermal Power Plant in Lao PDR
- 2) 234-MW Ratchaburi World Cogeneration Power Plant in Ratchaburi industrial estate
- 3) Natural gas pipeline project for distribution to Ratchaburi World Cogeneration Power Plant
- 4) 410-MW Xe-Pian Xe-Namnoy Hydroelectric Power Plant in Lao PDR
- 5) 132-MW Nava Nakhon Power Plant in Nava Nakhon industrial zone, Pathumthani
- 6) Natural gas pipeline project for distribution to Nava Nakhon Power Plant

### Environmental Impact Assessment

#### *Ratchaburi World Cogeneration Power Plant*

Most electricity from 234-MW Ratchaburi World Cogeneration Power Plant located in Bodharam District, Ratchaburi Province will be distributed to EGAT. Meanwhile, remainder of electricity and steam will directly distributed to customers in Ratchaburi industrial estate.

Two units of cogeneration power plant mainly use environment-friendly natural gas. Each unit contains 2 units of gas turbine, 2 units of high pressure steam generator and a unit of steam turbine generator.

The EIA of Ratchaburi World Cogeneration Power Plant was considered and approved by the Office of Natural Resources and Environmental Policy and Planning on November 2012. The first unit was commercially operated in November 2014 and the commercial operation of second unit is scheduled in March 2015.

The abovementioned projects have strictly followed environmental impact prevention and mitigation measures and the environmental quality monitoring measures, thus leading to smooth construction and environmental quality management, such as air emission, wastewater, waste and noise under the specific legal standard. Environmental quality monitoring report was arranged and biannually submitted to relevant units. The report includes the project progress since the construction stage as well as life quality development for local communities in order to creating the acceptance.





## Our Partner

- ✓ Community development contribution of 317 million baht.
- ✓ Initiate women's empowerment project
- ✓ Green procurement increasing 11.54%.
- ✓ Local employment increasing to 1,155 million baht, or 70.61% of the entire employment.

## Community Engagement and Acceptance

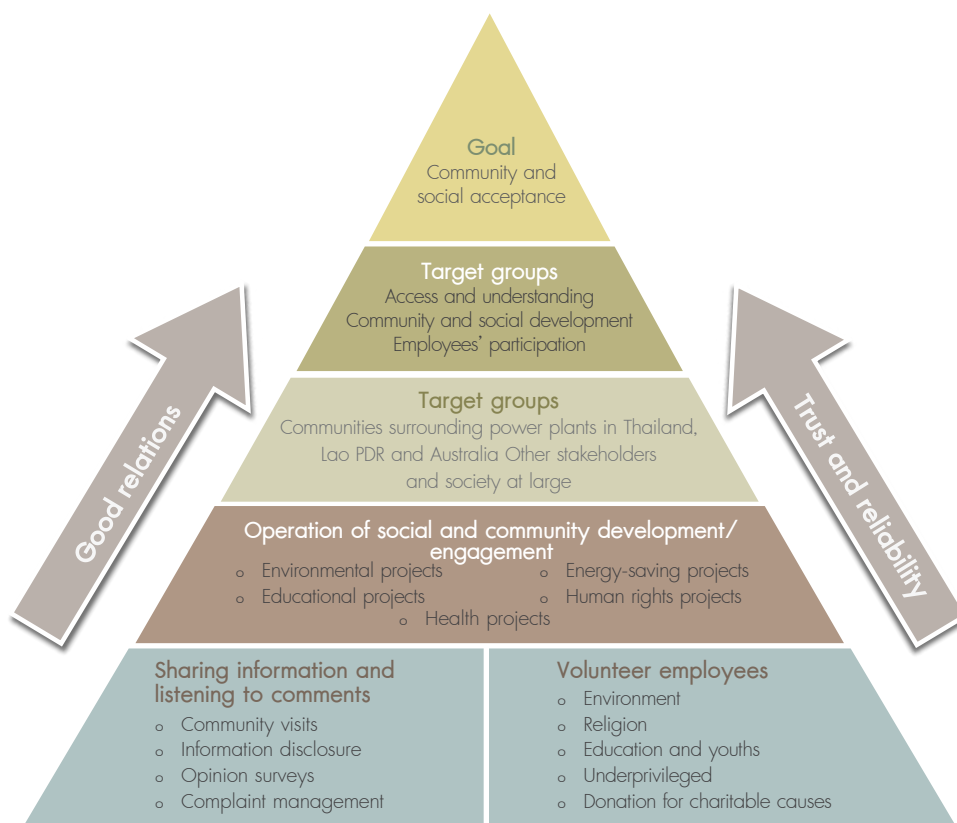
The company is well aware that trust, acceptance, and support from stakeholders, especially the communities surrounding its operating areas, contribute to steady and sustainable business growth. Before developing each project, the company must engage the stakeholders in the process of studying and assessing environmental, economic, and social impacts. It also involves them in formulating preventive and corrective measures and community development plans that cover all problems and needs of stakeholders. Therefore, the activities conducted with stakeholders focus on continued engagement building and their participation in domestic and international community development. These activities promote a good quality of life by applying sustainable development guidelines to forge good relationship and ensure mutual benefit of both parties and society at large.

The company is strongly determined to serve communities' needs as much as its potential and capacity allows by

promoting employees' volunteer participation. It also seeks cooperation with central and local government agencies, private community development organizations, and education institutes and communities in every country where it operates. The company not only focuses on saving the energy, natural resources, and environment, but also promotes education, sanitation, and career development.

Listening to communities' comments is considered the heart of community work because their suggestions and opinions are valuable for continued improvement. As a result, the company provides several channels for comments, such as personal visits and field trips to its power plants. The company also established Community Relations Department to visit the communities so that they can promptly and conveniently give feedback. This is conducted in parallel with the quick and fair complaint-handling process.





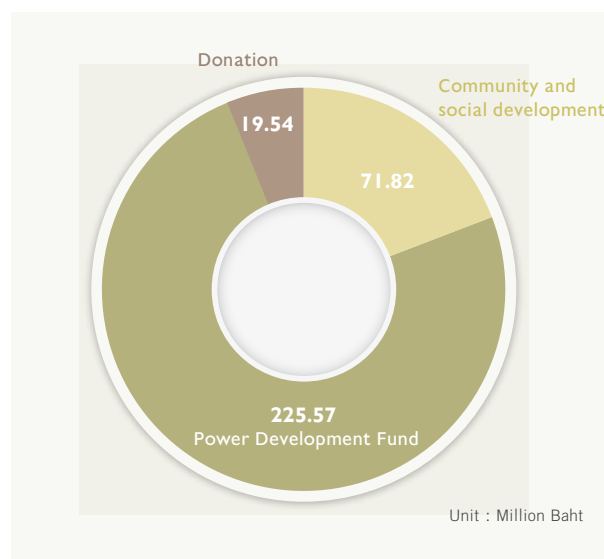
## Key performance outcomes for 2014

### 1. Community and Social Development

Considering the problems and needs of stakeholders in the surrounding communities and society, the company involves them in the thinking, planning, decision-making, operating, and benefit-sharing process of community and social development. The company has conducted related activities for two groups of direct and indirect stakeholders, namely communities surrounding power plants and society at large.

This year the company contributed 317 million baht to fund activities of community and social development, with 71.82 million baht going to the activities of community and social development, 19.54 million baht for donations and 225.57 million baht going to Power Development Fund, as part of the efforts to improve the quality of life of the people in communities and society.

### Contribution to Communities' and Society's Activities in 2014

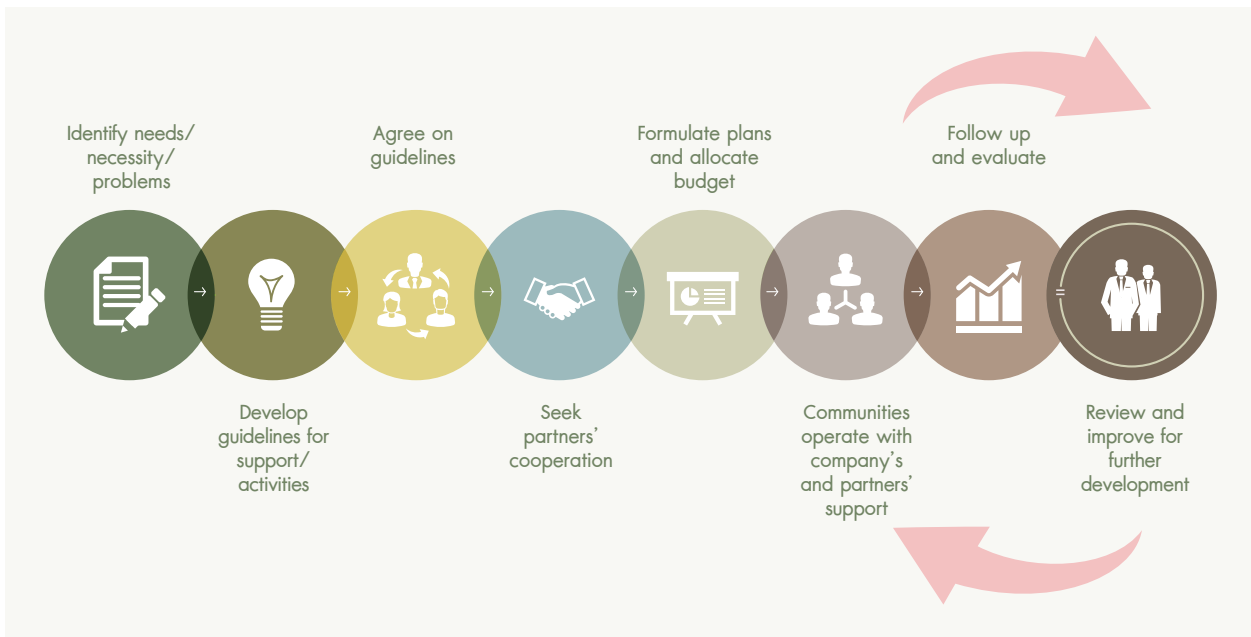


**1.1. Process and Method of Community Development Project**

To ensure truly sustainable community development projects, the company focuses on involving the stakeholders at eight major steps, namely identifying problems, needs, necessity, and development directions; making decisions to come up with proper options; seeking supportive partners, including central and local government agencies, community leaders, and private organizations and individuals to operate together and provide key support; and formulating

plans and operating budgets. Each project highlights the communities’ operation while the company and partners provide support, monitor the activities, and evaluate its success. The company also reviews the challenges and obstacles of past operation to rectify them and improve the situation, leading to further development to make sure that the communities and society can strongly and independently continue projects.

**Process and Method of Community Development Project**



**1.2. Operation of Community Development Project**

**💡 Environmental Projects**

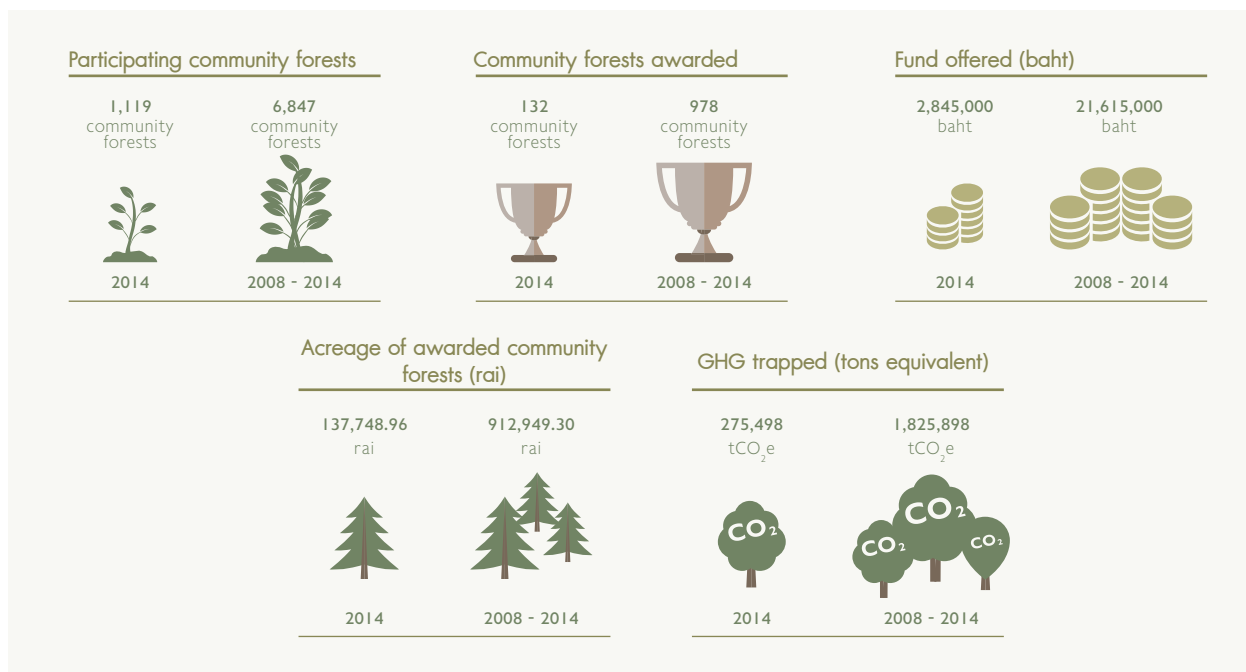
The company collaborated with the Royal Forest Department (RFD) in forest and environment projects to save community forests in every region of Thailand. It encouraged communities to manage, save, and increase their own community forests to enhance forest abundance in Thailand, resulting in biodiversity, which directly and indirectly benefited the community and alleviated the issue of global climate change. Three main activities consisted of:

**1) Community Forest Contest**

This activity has been conducted since 2008 to commend communities for protecting forests, efficiently managing the forest-caring system to ensure maximum benefit, and expanding the ideas and networks to other communities. The key target was villages near community forests in every region of Thailand.



## Community Forest Contest in 2014 and during 2008-2014



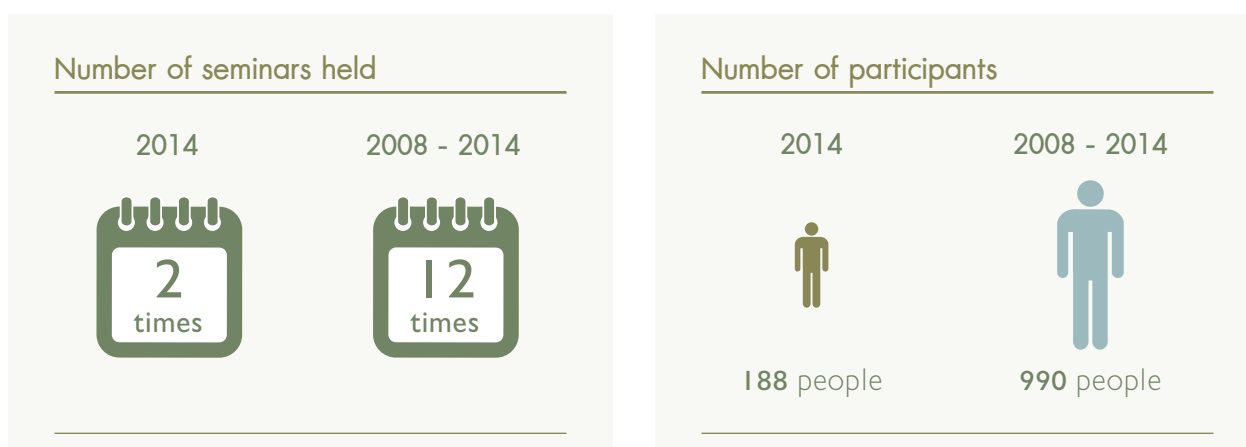
More community forests became keen on joining the activities, which showed communities' awareness of serious forest saving. It was found out that the number of registered community forests with RFD has increased by 4,196 over seven years. This year, 12.4% of 9,031 community forests around country participated in the contest.

## 2) Seminar of community leader networks

This activity has been conducted since 2008 to offer community leaders a chance to share their experiences, leading to a collaborative network among different community forests and effective forest care. For the outcomes of 2014, two activities were held, with 188 leaders from 14 central provinces and 16 Northern provinces joining.



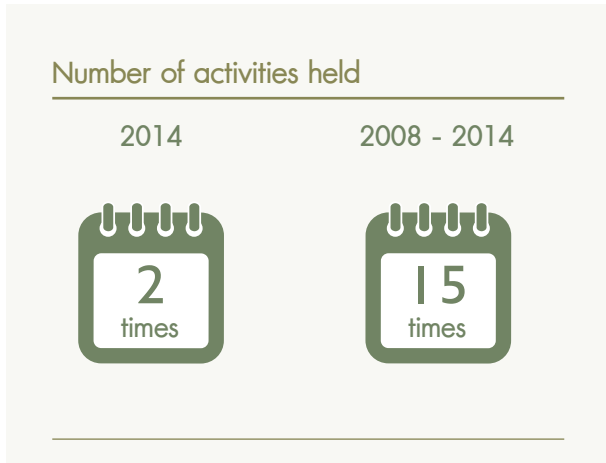
## Seminar of Community Leader Network in 2014 and during 2008-2014



**3) Kla Yim Youth Camps**

Held twice a year since 2008, this activity aims to promote the knowledge of energy and environmental conservation and foster environmental consciousness among youths so that they may continue to take care of community forests. This year, two activities were held, with 157 participating children from nine Southern provinces and nine Northeastern provinces.

**Kla Yim Youth Camps in 2014 and during 2008-2014**



**💡 Energy Conservation Project**

The project, with the two following activities, aims for communities to become less dependent on external energy resources and adapt suitable technologies for the locals.

1) Project to expand community energy plans in Ratchaburi, Phetchaburi, and Kanchanaburi province

Since 2011, the project has been conducting key community activities, namely strengthening the capacity of community energy volunteers, conducting seminars to increase the knowledge, and sponsoring proper technologies including biomass stoves, solar-energy drier cabinet, biogas fertilizer, high-efficiency stoves, energy-efficient bulbs, and barbecue ovens. This helps the communities consume energy from local resources and lessen its dependence on external resources.

2) Solar Energy Project in Ban Hua Ha community, Mae Hong Son province

Starting this year, the project installed a solar-home system in 25 households and trained communities in maintenance. Moreover, the project established a village energy fund, annually receiving 41,500 baht of carbon credit from the company for five years. This fund maintains equipment so that it can continuously generate electricity at full capacity.

**💡 Educational Project**

1) Scholarship Project

It aims to offer educational opportunities to well-behaved, needy students at every level (from the pre-school, primary, to secondary level) in areas around power plants.



Scholarship Activities	Performance Outcome					Outcomes
	No. of Schools	2014		Cumulative		
		No. of Scholarships	Amount (baht)	No. of Scholarships	Amount (baht)	
Ratchaburi Power Plant & Ratchaburi-Power in Ratchaburi province	27	987	1,979,000	8,850	18,039,000	<ul style="list-style-type: none"> <li>-11,907 students won educational opportunities</li> <li>- Positive attitude and good relationship between communities and power plants</li> <li>- Reduce parents' expenses by a total of 23,251,000 baht.</li> </ul>
Pratu Tao Power Plant in Sukhothai province	1	104	132,000	523	924,000	
Sao Thian Power Plant in Sukhothai province	8	179	293,900	720	1,181,000	
Project-staging area in Pathum Thani province	21	278	500,000	1,814	3,107,000	
<b>Total</b>	<b>57</b>	<b>1,548</b>	<b>2,904,900</b>	<b>11,907</b>	<b>23,251,000</b>	

2) "Education For Career Empowerment in Lao PDR" Project

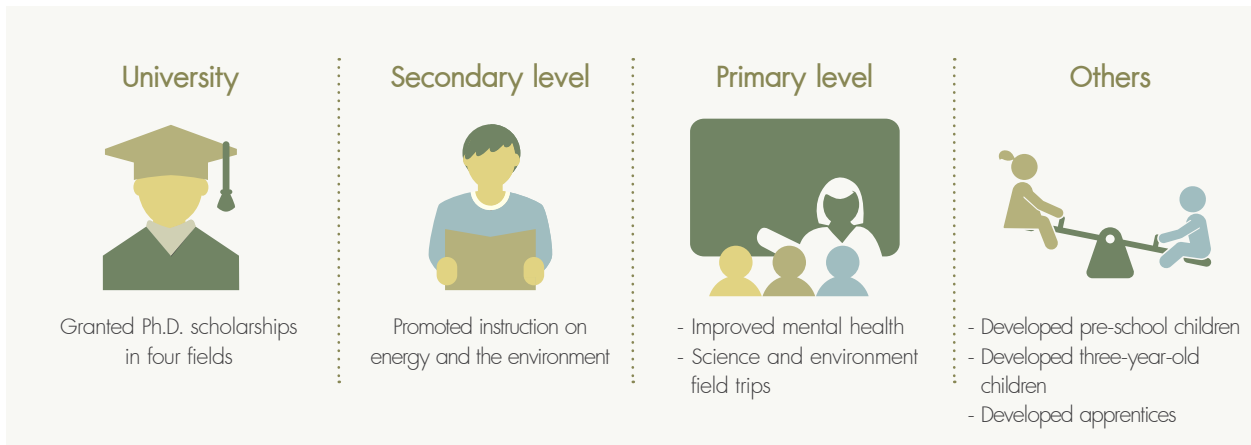
The company has been conducting this project as CSR activity in Lao PDR from the end of 2010 to 2014. The project deliberates Lao government's strategy and plan for educational development. The government's

policy more focuses on developing vocational education to create specialized, skilled personnel in response to the nation's economic growth. To best serve the needs, the project's key objectives are to (1) develop instructors' competency, (2) develop students' skills and capability, and (3) build high-quality practice labs.

Activities	Outcome	Benefit
Developing the instructors' competency in disciplines of electric technicians, mechanics, and welders	48 people	Instructors whose competency was developed will apply their knowledge to improve teaching curriculum at education institutions
Developing students' skills and capability at vocational certificate, high vocational certificate, and degrees (electrician, mechanic and welder)	172 people	Some students whose capacity was developed will become teachers, while others will be self-employed and enter the labor market.
Building high-quality practice labs	6 labs	Scattered around Vientiane capital and the region, the labs serve as practice centers for instructors and students before they finish the courses.

3) Education Development in Australia

It aims to offer proper educational opportunities to students from the pre-school to the university level around power plants. This year, half of the community development fund was allocated for the target group’s educational activities as seen below:



**💡 Human Rights Project**

A project to enhance women’s role in environmental and natural resource management seeks to create gender equality in society and the economy by encouraging women to be involved with environmental development. The operation, collaboration between the company and Thai Environment Institute (TEI), started at the end of this year and now in the stage of information study and selection of target areas and target groups as part of a four-year project from 2014 to 2018.

**💡 Health Project**

It strives for communities surrounding operating areas to take care of their health and have a better chance to access medical care.

1) The project provided mobile medical and dental care units every year. This year 24 activities provided these services:

Service	Served people
Medical care	1,319
Dental care	528
Alternative medicine	747
Thai massage (extra activity)	1,614
Haircut (extra activity)	1,418

2) The project trained 51 sub-district public health officers and village health volunteers in holistic health promotion to equip them with new knowledge to serve the people.

3) The project held a self-sufficient health camp for 39 sub-district public health officers and village health volunteers to enhance their service effectiveness.

**2. Sharing information and listening to comments**

As a part of communities around the power plants, the company lets the employees participated activities with communities to share their problems and comments. This will be the guideline for solving problems, holding proper activities that meet their needs, and sharing accurate information to bolster communities’ confidence in the company’s manufacturing process. In addition, it formulates the measures of environmental management and power plant safety to ensure that it will not affect communities. This year the company conducted the following visits to share the comments of surrounding communities:

### 2.1. Field Visits

Every power plant established a Community Relations Department, which has been conducting field visits to meet every sector of stakeholders in surrounding communities and listen to their comments to ensure healthy relations between the power plants and communities. In the previous year, the departments visited people in every surrounding community weekly.

### 2.2. Information Disclosure

The company's main power plants disclosed operational information to the neighboring communities and interested parties via several channels as seen appropriate:

Power Plant	Media/Channel	Target Group	Outcomes
Ratchaburi Power Plant	"Our Home" Journal to reveal the findings of air and water quality monitoring in the power plants, together with communities' movement	Neighboring communities/ government agencies/ press members	The quarterly journal is disseminated, totaling 62,000 copies a year, to every household within five km., covering nine sub-districts and 84 villages.
	Environment report discloses the findings of the annual environmental quality monitoring	Neighboring communities/ government agencies	2,000 reports are published and disseminated once a year.
	Power plant visits under the project of "Welcome to Our Home" to create better understanding of manufacturing processes	Neighboring communities/ government agencies	492 participants
Ratchaburi Power Plant and Ratchaburi Power Plant	Power plant visits	Public	4,400 people visited Ratchaburi Power Plant and 456 people visited Ratchaburi Power Power Plant, totaling 4,856 people.
	The signboard in front of the power plants displays real-time information on air quality	Neighboring communities and passers-by	For the communities and interested public, the result is displayed daily from 6 a.m. to 9 p.m.

### 2.3. Opinion Surveys

It is a part of the company's performance report on compliance with preventive and corrective measures of environmental impact and environmental quality monitoring. Each opinion survey, annually conducted by Ratchaburi Power Plant, revealed the comments and attitudes of people living around the power plants toward its overall operation.

Out of 200 household survey samples, 37% was satisfied, only 4% not satisfied, and 59% had no comment. Each year the survey outcome is used as the company's operating guideline to appropriately deal with community stakeholders.

**2.4. Complaint Management**

Several channels, such as complaint boxes, telephones, or field officers, were put in place to receive complaints, which will later be entered into the system so that the people in charge and the complainants can jointly evaluate the causes and solutions, and eventually prevent recurrence. Then the company seeks consent from the complainants on the solutions and prevention before assigning the party in charge to further proceed.

This year three complaints from the communities were filed:

- 1) Ratchaburi Power Plant received complaints about workers’ violation of traffic laws. It then set a strict controlling measure, which was mutually accepted, to ensure maximum safety for communities.
- 2) Pratu Tao Power Plant received complaints about the occasional disturbing noise caused by defective equipment. It therefore shut down to repair the equipment and bring the noise to a standard level, which was then accepted by the communities.
- 3) Sao Thian Power Plant received complaints about disturbing noise at night. As a solution, it made a soundproof wall, which was accepted by the complainants.

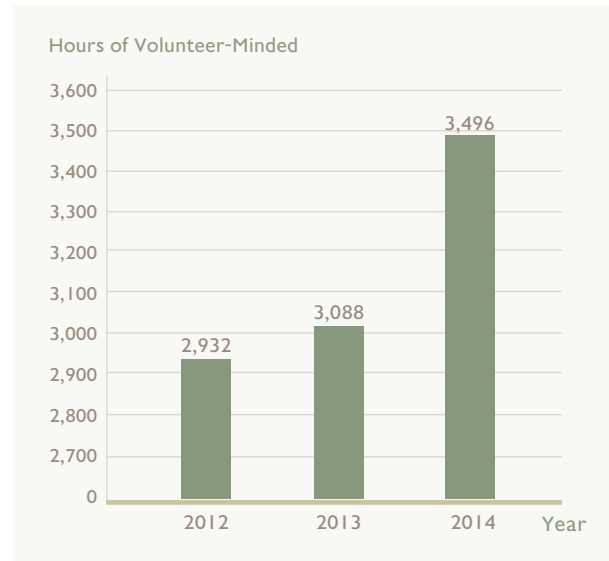
**3. Volunteer-Minded Employee**

The company encourages every employee to get involved in activities of their community and social development, such as environmental, religious, educational, and youth, including the underprivileged and donation for charitable causes. These year-round activities were held in and outside the organization so that employees can join them as one of their duties. To foster employees’ conscience as a good role model for society, each activity allows them to join voluntarily, and these employees are called “Volunteer-Minded Employee”. As a result of their participation in the company’s activities held from 2010 to 2014, the organizational value and culture was instilled in their mind to do public service, which will widely benefit the company, communities, and society, evident in the increasing hours of volunteers.

This year, 52 male employees and 85 female employees, totaling 137 (70.26% of 195 workers at head office), joined the activities. The total participating hours, on holidays and

work days, totaled 3,496 hours, 1,760 hours of which were work days. This accounted for the wage of around 660,000 baht.

Participating Hours of Volunteer-Minded Employees between 2010 and 2014



**4. Rights and Equality of Stakeholders in the Communities**

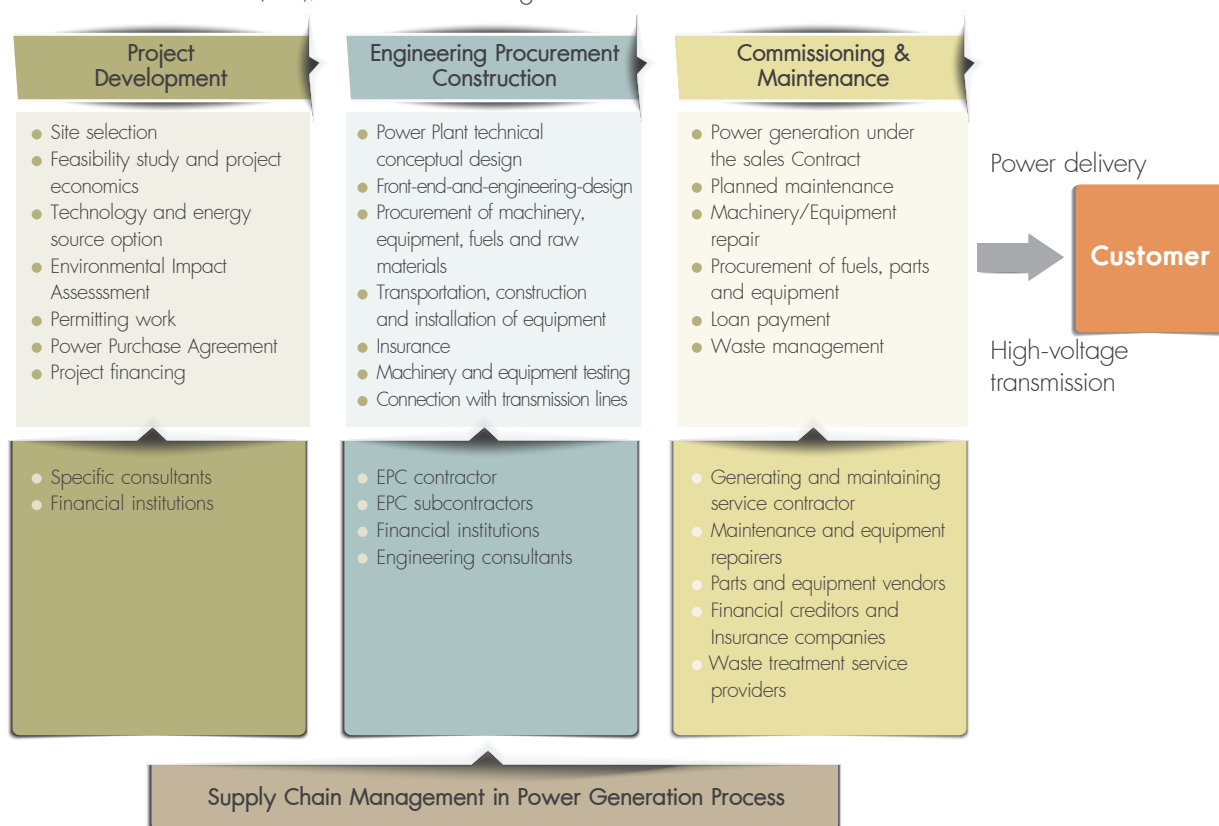
The company values the right of people in the communities by respecting their customs, culture, tradition, rights to opinion expression, decision-making, and the benefits they are entitled to. It also takes into account the equality of people in society without discrimination of race, religion, gender, age, belief, and social status. Every person from each sector in the community can equally take part in the decision-making, participation, and benefit-sharing. They can involve activities under the activities organized or supported by the company, such as human rights support, community development in social, economic and environmental aspects, and the report development process of EIAs. The company has been conducting its business by adhering to the principle of continued respect for the rights and equality of stakeholders in the communities, resulting in their trust and belief in the company, as well as good relations between the people in the communities and the company and among the people themselves. This leads to a peaceful resolution of problems or potential misunderstanding in the communities.



## Supply Chain Management

The company takes very seriously the growth and sustainable development of the supply chain management of power generation from project development to power generation and eventually power delivery to its clients as committed to under the purchase agreements. There are three main stages: project development, engineering-procurement-construction (EPC), and commissioning and

maintenance involving with trade partners having experiences and specific expertise. Because of high investment of a power project, the maximum efficiency of the supply chain management is critical to the sustainability of the power generation business in meeting the power demand.



## Supplier Selection and Evaluation

To ensure that its operation successfully achieves the target, without social and environmental impacts, the company considerably selects credible and reliable suppliers for working together. The supplier's qualifications including experience, appropriate expertise, and qualified personnel were specified as general bidder selection criteria. Also, eligible bidders must have no conflict of interest with the others in same work bidding, no corruption records, no negligence and not being in authorities' blacklist. They must not be in breach of the law governing labour, environment, intellectual property as well as human rights and social issues. In addition, they have to show

political neutrality. The company also takes into account the supplier's location and priority is given to supplier registered or located in Thailand or a country where we operates.

Aside from evaluation of general criteria on labour, environment, human right and social for all suppliers, the company considered new suppliers last year by additionally taking into account their environmental care practice, with the ISO 14001 standard certification. On the part of labour and social issues, track records and performance of new trade partners were rechecked. It appeared that they were no records on the said issues. In


2015, the company plans to visit the vendors' premises in order to more efficiently assess their environmental, labour, social and human right compliance.


For the environmental, social, labour and human right issues, the company by a responsible unit closely monitors and checks their in-process operation. Regarding practices on labour, safety, occupational health and environmental responsibility, the company's regulations are automatically enforced as operational protocol for the contractors. In 2014, there was no labour-law violation of vendors and negative impact to society, environment and community

resulting from their works. The company also plans to develop the suppliers evaluation form required the responsible unit and contractor's worker sharing their view and comment about the suppliers' operation after work completed. In addition, the company welcomes any relevant complaint or feedback from contractor's workers via procurement department and a responsible unit. This mechanism helps promote fair labour practices for contractors' labour. So far there was no complaint or feedback from contractors' workers submitted to the company.

## Procurement

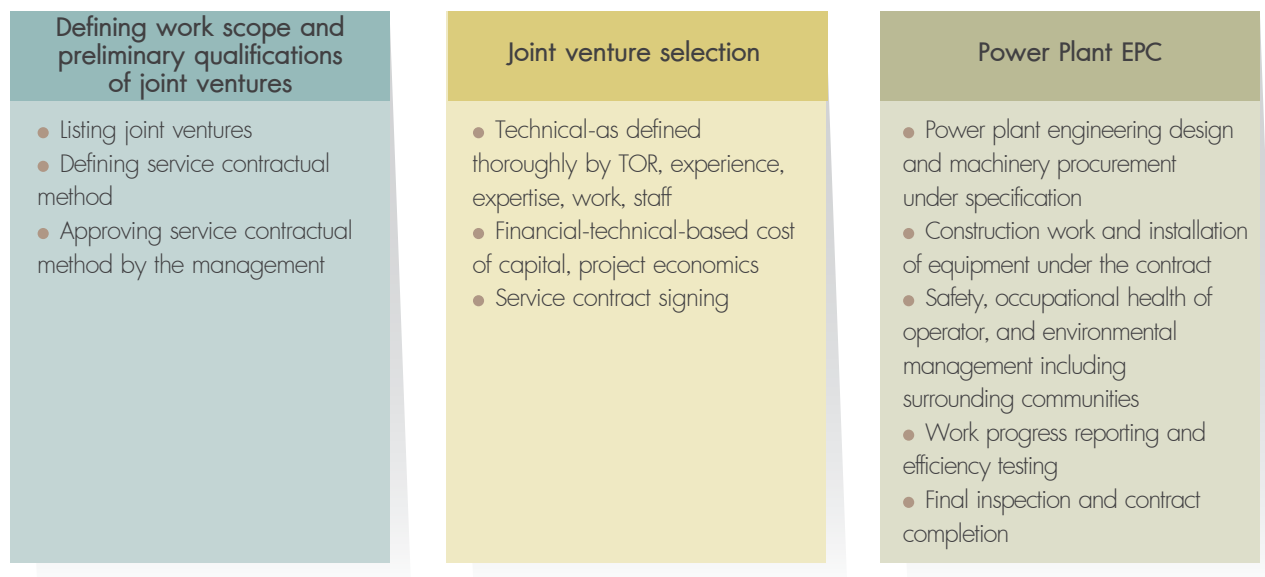
The procurement management has been well established in forms of "Rules on procurement protocol for the company and all subsidiaries. This is to ensure transparency, equity and ability of the joint venture selection process with the right qualifications, experience, expertise, equitable practice, no corruption record, no negligence, and not being in the black list of any state agencies. The company's procurement practices are bidding and special procurement methods for specialized work.

 **Bidding procurement practices:** it is for the selection of consulting partners. The company kicks off the process with the preparation of the scope and terms of reference, which are then sent to preliminary selected consultants. Potential consultants then respond to the company with technical proposals and supporting track records. At least three potential consultants are required. The company then sets up a procurement steering committee to review and screen all the proposals, including technical and related cost proposals, and propose them to the management for final approval. Determination of work conditions and signing of the contractual agreement are to take place at the end. A performance guarantee must also be placed to comply with the company's procedural regulations and it will be returned after work finished.

 **A special procurement method:** it is reserved only for the procurement of costly machinery and equipment, precision, and accuracy and specific timeframe of delivery, such as power plant design, heavy machinery with specific technology fit for specific investment models, or selection of contractors whose work and qualifications are highly specific, including operation and maintenance of huge power plants. EGAT is an example for this special procurement method. With their specific qualifications and

work experience, the company applies a special procurement method to select EGAT to operate and maintain its sizable power plants in a long-term agreement. Again, a special steering committee is set up, with members possessing highly specific knowledge and skill sets to review and determine all the details before submitting the recommendations to the management for approval.

For work with specific aspects, such as very high capital or very complex technologies, a special supervisory team is set up by the company to oversee matters. The team comprises highly skilled engineers or very knowledgeable personnel of the company or outside experts. The team is tasked to support the company's procurement committee to ensure complete transparency, auditability, workable practices, and suitable budgets, with the ultimate goal of running the power plant with highest possible efficiency and delivery capability. Currently the company is developing a new business partner assessment criteria before the selection. This will be used as a preliminary review for all joint ventures, contractors, and subcontractors for our procurement of power generating units and parts. The procedure also calls for thorough review of impacts on economics, society, and the environment.



## Supervision of joint ventures, contractors and subcontractors

Recognizing the significance of joint ventures, contractors, and subcontractors to the success of projects, the company is fully committed to taking full accountability and treating all stakeholders fairly. The code of conduct on administering joint ventures, employees, and labour, including standard operating procedures on safety and the environment and workforce handling as stipulated in the EIA reports and regulations on work safety, occupational health, and work environment, is strictly observed.



In addition, the company clearly defines specific measures for contractors and subcontractors to apply to protect their workers under the company's code of conduct, labour law, welfare and safety. Contractors and subcontractors are required to comply with labour law or international standard, support local hiring, provide labour protection measures covering entire work scope and compensation and remedy measures. In 2015, the company will specify criteria for selecting new trade partners and contractors who adhere to appropriate and fair labor practices, with welfares as well as occupational

health and safety management. In addition, the company pay attention to follow human right principle such as absence of the underaged and illegal workforce, absence of sexual harassment, protection of lives and properties of the workforce, and treatment of the workforce with respect to the fundamental rights and dignity. These measures must be seriously and strictly implemented.

To ensure full compliance with the contractual agreement and to avoid any impact and damage to the project and surrounding communities, a special work committee is also set up to monitor and supervise work conducted by the selected joint ventures, contractors, and subcontractors until the project completed.

The company also assigns a work unit directly in charge of work safety, occupational health, and the environment, to closely monitor ways that these joint ventures, contractors, and subcontractors treat their workers. This work coordination results in the successes of our projects as planned. Meanwhile, workers of all parties are fair treated and well protected under boundary of labour, safety and occupational health laws and regulations.

The company successfully made significant progress in two power plant projects with its supply chain management practices in 2014:

- 
**The 117-MW Ratchaburi World Co-generation** Unit # 1 commenced commercial operations in November 2014.
- 
**The 626-MW Hongsa Thermal Power Plant** Unit # 1 in Lao PDR is now under testing in preparation for commercial operation in June 2015.

**Procurement value in 2014**

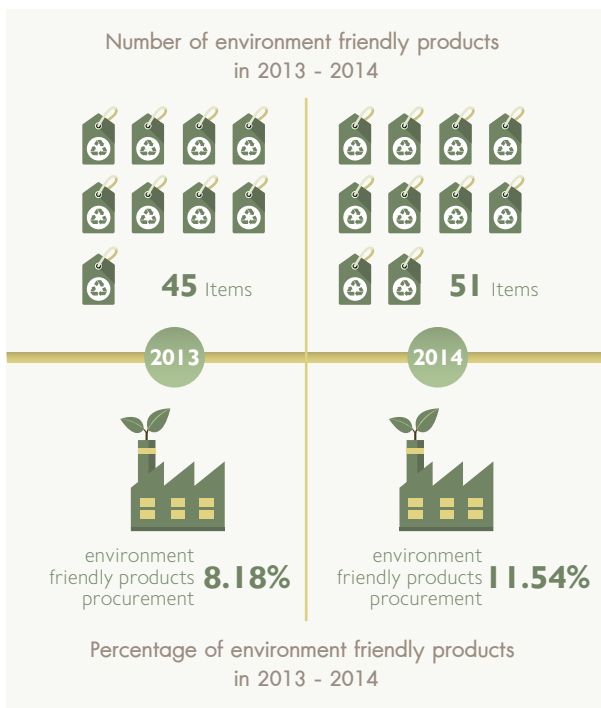
- Total procurement value of products and services provided by local trade partners: 1.155 billion baht (accounting for 70.61% of the company's entire procurement value.)
- Total procurement value of products and services provided by international trade partners: 480 million baht (accounting for 29.39% of the company's entire procurement value)

### Environment-Friendly Procurement

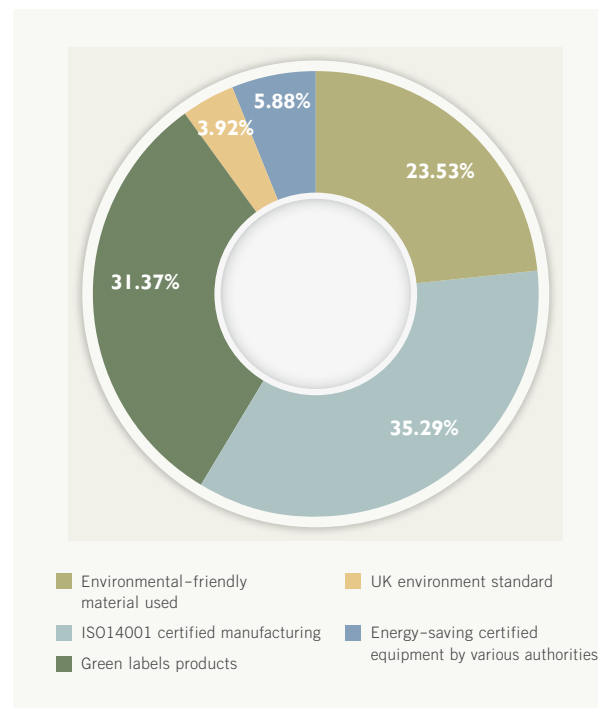
<p><b>5-Year Target (2013-2017)</b></p>	<p>Number of environment-friendly products to account for 25% of total products in the procurement system</p>
<p><b>2014 Target</b></p>	<ul style="list-style-type: none"> <li>● Increase in the number of environment-friendly products and services in the procurement system from 2013 by 5%</li> </ul>
<p><b>2014 Performance Summary</b></p>	<ul style="list-style-type: none"> <li>● Developed environment-friendly procurement rules and procedures under the guidelines of the Green Office of the Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment</li> <li>● Procured only office supplies and products with Green Labels or Carbon Labels</li> <li>● Used only electrical and electronic appliances with the Energy Saving Label "5" or the Energy Star Label from the US EPA</li> <li>● Selected only vendors who used raw materials, parts, work processes, and product delivery that can be inspected for origins and standards such as environmental standard certification.</li> </ul>
<p><b>New Supplier</b></p>	<ul style="list-style-type: none"> <li>● New 47 vendors were selected to deal business with the company in this year.</li> <li>● Out of these, two vendors were screened by environment criteria: Environmental Management System: ISO 14001 certified in manufacturing process.</li> </ul>

<p><b>2014 Performance Review</b></p>	<ul style="list-style-type: none"> <li>● Increased the number of environment-friendly products from 2013 to 51 items</li> <li>● 51 environment-friendly items from a total 442 items procured in 2014 accounted for 11.54% including;             <ul style="list-style-type: none"> <li>- 16 items with Green Labels, accounting for 31.37%</li> <li>- 18 items manufactured from factories with the ISO 14001 standard, accounting for 35.29%</li> <li>- 12 items with environment-friendly raw materials, accounting for 23.53%</li> <li>- 3 items certified for energy-saving, accounting for 5.88%</li> <li>- 2 items certified by UK environment standard, accounting for 3.92%</li> </ul> </li> <li>● Increased the procurement value of environment-friendly products by 187% from 2013, from 8,038,742 baht to 23,102,333 baht</li> </ul>
<p><b>2015 Plan</b></p>	<ul style="list-style-type: none"> <li>● Increase the number of environment-friendly products in the procurement system from 2014 by 5%</li> <li>● Promote the use of environment-friendly products among employees</li> <li>● Develop performance assessment with joint ventures and contractors, including checklist and questionnaire before and after product and service delivery</li> </ul>

Procurement data on environment-friendly products



Percentage of environment friendly products in 2014



## Performance data

Economic				
Data	Unit	2012	2013	2014
Sale Revenues	Million THB	55,365.40	43,570.73	49,402.01
Operating costs	Million THB	47,269.50	41,059.81	47,913.68
Employee wages and benefits	Million THB	660.59	558.96	628.49
Dividend payments for the performance	Million THB	3,291.50	3,291.50	3,291.50
Payments to government	Million THB	2,011.93	1,420.54	1,630.66
Community investments	Million THB	139.37	114.12	316.93
Spent on local suppliers <sup>[1]</sup>				
- RATCHGEN	Million THB	361.38	125.14	677.86
- RATCH	Million THB	240.57	511.83	477.44
Spent on Foreign suppliers				
- RATCHGEN	Million THB	361.38	125.14	233.93
- RATCH	Million THB	240.57	511.83	247.04

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

Health & Safety										
Data	Unit	RATCH			RATCHGEN			RPCL		
		2012	2013	2014	2012	2013	2014	2012	2013	2014
<b>Total workforce represented in formal joint management—worker health and safety committees</b>	person	9	9	11	13	15	15	11	11	11
<b>Injury rate (IR)</b>	No./200,000 Hours worked	0	0	0	2.867	0.758	0.906	0.531	0.470	0.456
Employee	No./200,000 Hours worked	0	0	0	1.654	0	0	0	0	0
- Male	No./200,000 Hours worked	0	0	0	0	0	0	0	0	0
- Female	No./200,000 Hours worked	0	0	0	1.654	0	0	0	0	0
Contractor	No./200,000 Hours worked	0	0	0	1.213	0.758	0.906	0.531	0.470	0.456
- Male	No./200,000 Hours worked	0	0	0	1.213	0.758	0.777	0.531	0.470	0.456
- Female	No./200,000 Hours worked	0	0	0	0	0	0.129	0	0	0







Health & Safety										
Data	Unit	RATCH			RATCHGEN			RPCL		
		2012	2013	2014	2012	2013	2014	2012	2013	2014
Total contractors	person	0	0	0	1	0	0	0	0	0
- Male	person	0	0	0	1	0	0	0	0	0
- Female	person	0	0	0	0	0	0	0	0	0

People							
Data	Unit	2012		2013		2014	
		Male	Female	Male	Female	Male	Female
Total Employee	Persons	254		264		366	
	Persons	136	118	144	120	229	137
<b>Employee by employment contract</b>							
Permanent	Person	129	110	135	112	227	137
Temporary	Person	7	8	9	8	2	0
<b>Employee by age group</b>							
<30 years	Person	34	45	34	35	84	32
30-50 years	Person	64	68	75	77	98	94
>50 years	Person	38	5	35	8	47	11
<b>Employee by category</b>							
Top Management	Person	8	2	9	2	11	3
	%	3.1 %	0.8 %	3.4 %	0.8 %	3.0 %	0.8 %
Middle Management	Person	26	5	23	5	27	9
	%	10.2 %	2.0 %	8.7 %	1.9 %	7.4 %	2.5 %
Junior Management	Person	31	30	33	31	43	35
	%	12.2 %	11.8 %	12.5 %	11.7 %	11.7 %	9.6 %
Officer	Person	71	81	79	82	148	90
	%	28.0 %	31.9 %	29.9 %	31.1 %	40.4 %	24.6 %



People							
Data	Unit	2012		2013		2014	
		Male	Female	Male	Female	Male	Female
<b>Employee receiving regular performance review</b>							
Top Management	%	100.0	100.0	100.0	100.0	100.0	100.0
Middle Management	%	100.0	100.0	100.0	100.0	100.0	100.0
Junior Management	%	100.0	100.0	100.0	100.0	100.0	100.0
Officer	%	100.0	100.0	100.0	100.0	100.0	100.0
<b>Grievance</b>							
Total number of grievance about labor practices through formal grievance process	Case	0	0	0	0	0	0
- Total number of grievance addressed	Case	0	0	0	0	0	0
- Total number of grievance resolved	Case	0	0	0	0	0	0
Total number of grievance about human rights through formal grievance process	Case	0	0	0	0	0	0
- Total number of grievance addressed	Case	0	0	0	0	0	0
- Total number of grievance resolved	Case	0	0	0	0	0	0

- Employee data for 2012 - 2013 includes RATCH, Ratchaburi Electricity Generating CO., Ltd. and RATCH - LAO Services CO., Ltd.

- Employee data for 2014 includes RATCH, Ratchaburi Electricity Generating CO., Ltd., RATCH - LAO Services CO., Ltd. and RATCH Australia Corporation Limited.

\* Only RATCH data included

Environment				
Data	Unit	2012	2013	2014
Energy <sup>[2]</sup>				
Total energy consumption	TJ	132,909	107,337	118,193
Total direct energy consumption	TJ	221,857	187,833	200,455
- Natural Gas	TJ	213,575	184,790	196,425
- Bunker Oil	TJ	7,526	2,006	3,424
- Diesel Oil	TJ	756	1,037	607
Total Indirect Energy Consumption	TJ	274	177	176
- Electricity purchased	TJ	274	177	176
- Heating purchased	TJ	0	0	0
- Steam purchased	TJ	0	0	0
Total energy sold	TJ	89,222	80,673	82,438
- Electricity sold	TJ	89,222	80,673	82,438
- Heating sold	TJ	0	0	0
- Steam sold	TJ	0	0	0

Environment				
Data	Unit	2012	2013	2014
Total energy intensity (within organization)	GJ/MWh	9.0	8.4	8.8
Total Energy Reduction	GJ	45,145	50,695	75,494
- Fuel saving	GJ	0	0	0
- Electricity saving	GJ	45,145	50,695	75,494
- Steam saving	GJ	0	0	0
<b>GHG emission <sup>[3]</sup></b>				
Direct GHG emissions (Scope1)	tCO <sub>2</sub> e	12,620,091	10,598,826	11,329,402
Indirect GHG emissions (Scope2)	tCO <sub>2</sub> e	44,231	47,345	48,219
GHG emission intensity (Scopes 1+2)	tCO <sub>2</sub> e/MWh	0.511	0.475	0.497
Total GHG emissions reductions	tCO <sub>2</sub> e	7,290	8,186	12,580
<b>Emission <sup>[4]</sup></b>				
NO <sub>x</sub> emissions	Tonne	37,593	32,030	34,550
SO <sub>x</sub> emissions	Tonne	12.9	5.7	6.3
Opacity	%	2.8	4.3	3.7
<b>Water discharge <sup>[5]</sup></b>				
Total water discharge to surface water	Million m <sup>3</sup>	6.5	6.0	4.1
- COD loading	Tonne	243	228	254
- BOD loading	Tonne	26	22	23
<b>Waste <sup>[6]</sup></b>				
Total waste disposal	Tonne	17,305	7,397	10,444
Total hazardous waste disposal	Tonne	144	179	298
- Reuse	Tonne	24.8	24.7	60.3
- Recycling	Tonne	0.3	1.4	1.3
- Recovery (including energy recovery)	Tonne	118.0	150.4	236.2
- Secured Landfill	Tonne	0.9	2.6	0.4
- Onsite storage	Tonne	0	0	0
Total non-hazardous waste disposal	Tonne	17,161	7,218	10,146
- Reuse	Tonne	3,910.0	2,700.0	1,557.5
- Recycling	Tonne	107.5	531.7	525.0
- Recovery (including energy recovery)	Tonne	5.7	24.7	8.4

Environment				
Data	Unit	2012	2013	2014
- Landfill	Tonne	37.9	62.0	76.4
- Onsite storage	Tonne	13,100.0	3,900.0	7,978.4
Waste from non-routine operation	Tonne	0	0	0
Water <sup>[5]</sup>				
Total water withdrawal	Million m <sup>3</sup>	36.2	31.7	33.1
- Surface water	Million m <sup>3</sup>	36.2	31.7	33.1
- Seawater	Million m <sup>3</sup>	0	0	0
- Ground water	Million m <sup>3</sup>	0	0	0
- Rainwater	Million m <sup>3</sup>	0	0	0
- Municipal water	Million m <sup>3</sup>	0	0	0
Recycled and reused water	m <sup>3</sup>	862,798	904,794	973,702
	% of total water withdrawal	2.4	2.8	3.0

<sup>[2]</sup> Energy consumption are calculated based on conversion factors for stationary combustion in the energy industries from Thai Energy Statistics 2010

<sup>[3]</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 kgCO<sub>2</sub>/TJ on Net Calorific Basis

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

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

<sup>[4]</sup> Emission are calculated from the Continuous Emission Monitoring Systems (CEMs)

<sup>[5]</sup> The data are measured from metering

<sup>[6]</sup> The data are measured from Manifest System and weight scale

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## Recognition & Achievement

### Energy and Environment Conservation



- “Outstanding Award” for Energy Business under EIA Monitoring Award 2014 organized by Office of Natural Resources and Environmental Policy and Planning: 3,645-MW Ratchaburi Power Plant, consisting of 2,175-MW combined cycle power plant and 1,470-MW thermal power plant under the operation of Ratchaburi Electricity Generating Co., Ltd. received “Outstanding Award” for compliance with EIA Monitoring measures.



- Awarded “MEA Outstanding Energy Saving Building” Emblem under Energy Saving Building Award 2014 Program: organized for two consecutive years, RATCH conducted energy efficiency improvement in the office building and successfully implemented in line with the criteria of MEA index. The company can save up to 571,000 kWh/year or equal cost saving of 2 million baht per year, and the carbon dioxide emission reduction of more than 332 tons per year.



- Honor Plaque as the Private Organization Supporting Royal Forest Department’s Operation in the Category of Community Forest Promotion and Development: The company and Royal Forest Department have been joining hands to encourage communities to maintain the community forest under the “Love the Forest and the Community Project” implemented since 2008 with an aim to enhance the green areas for storing CO<sub>2</sub> and mitigating global warming problems.



- “2014 Outstanding Award” for Natural Resource Conservation organized by Ministry of Natural Resources and Environment: RATCH was endorsed as a benefactor continuously supporting Royal Forest Department’s mission relating to natural resources, forest and environment conservation.



- “Excellent Award” for Energy Project, under EIA Monitoring Award 2014 organized by Office of Natural Resources and Environmental Policy and Planning: 700-MW Tri Energy Power Plant under the operation of Ratchaburi Electricity Generating Co., Ltd., received “Excellent Award” for enterprise in the category of energy business as its operation was in line with requirements of EIA monitoring measures and outstanding environmental management performance.

## Energy and Environment Conservation



- CSR-DIW Continuous Award 2014 organized by Department of Industrial Works: Ratchaburi Electricity Generating Co., Ltd. received this award for three consecutive years due to its compliance with CSR principle and commitment to green organization.



- “Outstanding Award” for Energy Business under EIA Monitoring Award 2014 organized by Office of Natural Resources and Environmental Policy and Planning: Fuel oil transmission system project for the Ratchaburi Thermal Power Plant, unit 1 and 2 under the operation of Ratchaburi Electricity Generating Co.,Ltd., received “Outstanding Award” for energy project as its operation was in line with EIA monitoring measures and outstanding environmental management performance.



- “Silver” Award under the Green Office Project organized by Department of Environmental Quality Promotion: The company’s operation was on par with 7 standards of Green Office Project, including organizational management, energy and resource efficiency, wastewater management, decent workplace environment, procurement and continuous improvement.



- “Complementary Award” in Category of Community Service and Housing under EIA Monitoring Award 2014 organized by Office of Natural Resources and Environmental Policy and Planning: RATCH office building was recognized as an enterprise in category of community service and housing that complied with EIA monitoring measures and outstanding environmental management performance.

## Corporate Governance and Information Discloser



- “2014 Investors’ Choice Award” organized by Thai Investors Association: The company’s 2014 Annual General Meeting of Shareholders received 100 full scores for six consecutive years (2009-2014).

## Corporate Governance and Information Disclosure



- “Outstanding” Sustainability Report Award organized by Thai Listed Companies Association: The company received “Outstanding” Sustainability Report Award for two consecutive years due to its accuracy and completeness information related to environmental, social and governance (ESG) disclosed in the sustainable report.

### RATCH



- Thai Listed Companies’ Corporate Governance Assessment Program based on 2013/14 ASEAN CG Scorecard: The company’s average score of 87.65 or 61.73% regarded as “Excellent” at four-star level was higher than mean score of other 529 listed ASEAN companies, with score of 64.02 or 45.21% and was also higher than the mean score of other 100 listed Thai companies, with the score of 75.39 or 53.09%.



- “Outstanding” Information Presentation Award at 10th SET in the City organized by Stock Exchange of Thailand: The company was voted by 1,900 participants via questionnaires.

### RATCH



- “Excellent” Rating by Corporate Governance Report of Thai Listed Companies 2014 Program organized by Thai Institute of Directors (IOD): The company’s score from Corporate Governance assessment of 87% was higher than 72% of mean score from 550 surveyed companies in total. Also, its scores in all categories were higher than the mean score. The survey criteria was in line with ASEAN CG Scorecard Standard.

## Social Responsibility



- Benefactor of Children and Youth Award, in the Category of Natural Resource and Environmental Protection organized by Office of Promotion and Protection of Children, Youth, the Elderly and Vulnerable Groups, Ministry of Social Development and Human Security: The company received this award due to ‘Klayim’ Youth Camp under the ‘Love the Forest and the Community Project’ that has been annually organizing since 2008. This project focuses on building awareness of forest conservation among the youth from community forests nationwide.



- 2014 Outstanding Enterprise on Labour Relations and Welfare Award organized by Ministry of Labour: The company was recognized as an enterprise implementing fair labour practice and protection.

**Feedback Form**  
**2014 Sustainability Report**  
**Ratchaburi Electricity Generating Holding PCL.**

1. Reader Profile

- Gender  Female  Male  
Age  Below 30 years old  30 – 50 years old  More than 50 years old

2. Please identify your stakeholder type

- Shareholder  Investor  Alliance and Trade Partner  
 Community  Employee  Scholar/ Independent Organization  
 Customer  Mass Media  Other (Please specify.....)

3. Where do you receive this sustainability report?

- AGM  Company's website  Company's employee  
 Other (Please specify.....)

4. Why do you prefer reading this sustainability report?

- For support investment decision on RATCH's securities  
 For learning more about RATCH's business  
 Research and educational purposes  
 Other (Please specify.....)

5. Satisfactory level towards the sustainability report

- |                      |                               |                                 |                              |
|----------------------|-------------------------------|---------------------------------|------------------------------|
| Information adequacy | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low |
| Attractive topics    | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low |
| Readability          | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low |
| Design               | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low |
| Overall satisfaction | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low |

6. In your opinion, are you confident that RATCH potentially achieves the sustainable growth?

- Yes, because.....  
 No, because.....  
 No idea because.....

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

- Economy (Please specify.....)  
 Environment (Please specify.....)  
 Society (Please specify.....)

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

- Design  Readability  
 more content  Other (Please specify.....)

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



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**Channels to return the feedback form:**

1. Email : Send the photo of the completed feedback form to [sustainability@ratch.co.th](mailto:sustainability@ratch.co.th)
2. Fax : 0 2794 9888 ext. 9951-9955
3. Postal mailing : Send the completed feedback form to the specified address above
4. Mobile Phone : Send the photo of the completed feedback form to 08 1899 6908
5. Website : Download the feedback form at [www.ratch.co.th](http://www.ratch.co.th) and send back via email at [Sustainability@ratch.co.th](mailto:Sustainability@ratch.co.th)

# RATCH



RATCHABURI  
ELECTRICITY GENERATING  
HOLDING PCL.

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