



# TOWARD A SUSTAINABLE FUTURE FOR THAIS



01	About this Report
06	CEO Statement
08	PTT Group
10	PTT Group Sustainability Performance
14	Sustainable Development
16	Sustainable Governance
24	Value Chain
30	Operational Excellence
38	Knowledge Organization
44	Corporate Citizenship
49	PTT Performance Summary
63	Awards and Recognitions
65	GRI and UNGC Content Index
69	Assurance Statement



# CONTENTS

# ABOUT THIS REPORT

This seventh Corporate Sustainability Report covers PTT Group's performance in economic, environmental and social aspects during January 1, 2014 to December 31, 2014. This report presents the information more briefly and focuses on material aspects. PTT has expanded our online content which will be more frequently updated on the website for our stakeholders to have access to up-to-date information throughout the year in addition to the past data.

## Reporting Approach (G4-18)

This report has been prepared "in accordance" with the Global Reporting Initiative (GRI)'s Sustainability Reporting Guideline and Oil and Gas Sector Disclosures, Version 4 for Core Level. This report also contains the Communication of Progress on the United Nations Global Compact (UNGC)'s 10 Principles.



### PTT Group Sustainability Management Project



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## Reporting Scope (G4-17, G4-23)

The reporting scope is based on the material aspects which affects PTT's business sustainability. The scope covers businesses under PTT's own operation which consists of Gas Business Unit, Oil Business Unit, International Trading Business Unit and Infrastructure Business Group which was formed in 2014 as a result of organizational restructure. This year PTT has extended the reporting scope to include flagship companies; namely, PTT Exploration and Production Public Company Limited (PTTEP), PTT Global Chemical Company Limited (PTTGC), Thai Oil Public Company Limited (TOP), and IRPC Public Company Limited (IRPC). This year reporting scope excludes Global Power Synergy Public Company Limited (GPSC), a recently established company, due to its readiness in collecting and reporting data.

To provide a clearer picture of PTT's performance, the scope of the performance indicators disclosed in the back of this year's report include PTT's operated businesses only. PTT Group performance is presented throughout the report. Detailed performance of each flagship company is disclosed in respective company's Corporate Sustainability Report.

In the future, PTT plans to expand its data collection to include other subsidiaries and companies in which PTT holds 100 percent share. For a complete list of all subsidiaries, associates, and related companies included in PTT's consolidated financial statements, please refer to the 2014 Annual Report.

## Materiality Assessment Process (G4-18)

### 1. Issue Identification



Sustainability issues are considered and identified with inputs from Subject Matter Experts (SMEs). Issues are selected based on alignment with strategic direction, corporate risks, and stakeholders' interests and expectations.

### 2. Reporting Boundaries



Impacts of each material aspect are identified along the value chain, including, PTT Group companies, suppliers, customers, and consumers, etc.

### 3. Materiality Assessment



Identified material aspects are prioritized by opportunities and impacts to the organization (business case) and the stakeholders' interest and impacts to them. The content in this report covers the "high" and "medium" material aspects.

### 4. Verification



PTT Group Sustainability Alliance Committee is responsible for monitoring and verifying the report development by reviewing the results of the materiality assessment and report content, approving the content for disclosure and providing guidance to ensure report's completeness, balance, and coverage. In addition, an external party is engaged to verify materiality assessment process, stakeholder engagement process, collection and analysis of data, and performance indicators to ensure completeness, accuracy, reliability and transparency.

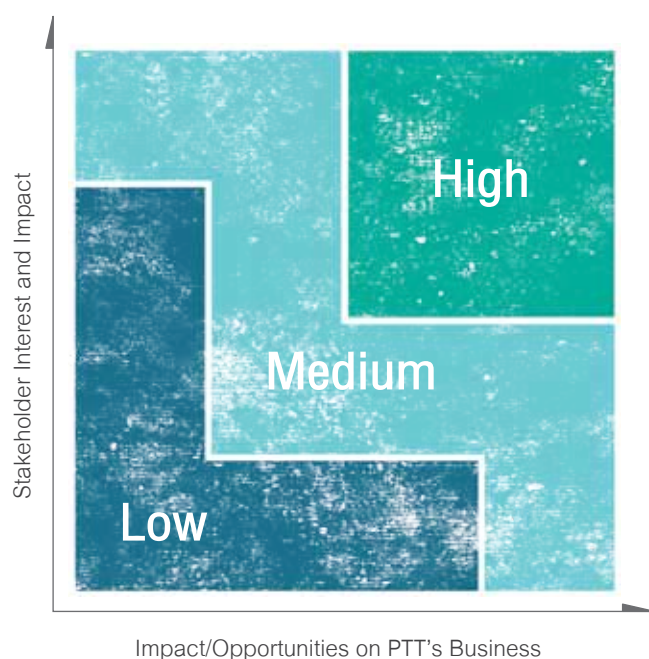
### 5. Continuous Development

In order to improve the completeness of the report, the previous year Corporate Sustainability Report had seek readers' feedbacks and suggestions from multiple channels such as interview of sustainability experts and participation in the Sustainability Report Award by Securities and Exchange Commission's and ThaiPAT Institute.

This report presents interviews of PTT's executives and representatives of stakeholders on material aspects to reflect their views of PTT's operation. In addition, reader's feedback survey has been included both in the printed report and on PTT's website.



## Materiality Matrix (G4-19)



## Sustainable Governance

- Sustainable Governance
- Fair Operating Practice
- Risk Management

## Value Chain

- Supply Chain Management
- Product & Customers

## Operational Excellence

- Environment
- Safety
- Capital Project Management

## Knowledge Organization

- High Performance Organization
- PTT Research & Technology Institute, Vidyasirimedhi Institute, Kamnoetvidya Science Academy

## Corporate Citizenship

- Corporate Citizenship

## Material Aspect Boundary Within and Outside of the Organization (G4-20, G4-21)

	Material Aspects	Boundary of Internal Impact	Relevant External Stakeholders
Sustainable Governance	Governance	PTT Group	Country, Community, Society, Shareholders
	Fair Operating Practice	PTT Group	Country, Community, Society, Shareholders, Business Partners, Customers
	Risk and Crisis Management	PTT Group	Country, Shareholders, Customers, Community, Society
Value Chain	Supply Chain Management	PTT Group	Business Partners, Customers, Community, Society
	Products & Customers	PTT Group	Customer, Society, Community
Operational Excellence	Environment	PTT Group	Business Partners, Customers, Community, Society
	Safety	PTT Group	Business Partner, Customers, Community, Society
	Capital Project Management	PTT Group	Community, Society
Knowledge Organization	High Performance Organization	PTT	
	PTT Research & Technology Institute	PTT Group	Country, Business Partners, Customer, Community, Society
	Vidyasirimedhi Institute		
Corporate Citizenship	Kamnoetvidya Science Academy		
	Corporate Citizenship	PTT	Country, Community, Society

## Restatement (G4-22)

PTT has modified data from the previous report. For details on the changes related to people, safety, and environment data, please refer to pages 50-51, 52-54, and 55-62, respectively.

## TOWARD A SUSTAINABLE FUTURE FOR THAIS

Striving hard for economic prosperity of the kingdom, **PTT** integrates knowledge leading to self-reliance for Thais. Most constructive questions we ask bring energy innovations to Thais. Our technologies fit harmoniously with life, nature, and the surroundings. Our ongoing efforts strive for sustainable co-existence for all of us.





## SEED OF KNOWLEDGE FOR A VIABLE FUTURE

Because today's world is knowledge-driven, PTT supports mental exercise on the basis of scientific and technological knowledge in search of total self-reliance. To this end, we've established academies for new-generation keen minds, idealism, and virtue.

## INNOVATION HERALDS CHANGES

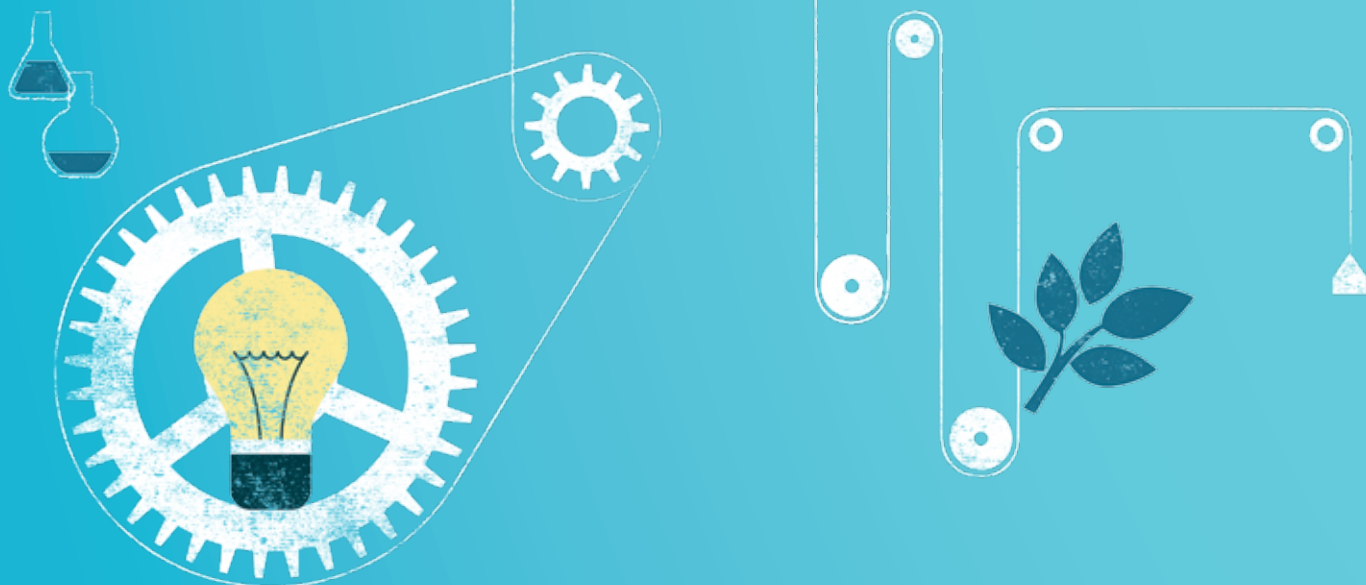
Competition today happens in an all-new arena. That's why PTT is promoting knowledge-based innovation with a focus on science and technology addressing day-to-day needs for quality. **For it is quality that fosters caliber for strides into future decades.**

## BETTER ENVIRONMENTAL QUALITY THROUGH INTEGRATED KNOWLEDGE

Lush forests herald a viable future for our children's children and beyond. That's why we must keep on reforesting and passing on reforestation knowledge to them, while planting green areas in their hearts. **For in one way or another, human beings do rely on forests.**







In the past year, PTT was honored with a personal visit from His Majesty the King to the Sirinart Rajini mangrove Ecosystem Learning Center in Pranburi District, Prachuap Khiri Khan Province where His Majesty observed the progress of the forest project. The Learning Center is a joint collaboration project between PTT and our network to restore abandoned shrimp farms to a learning center of ecologically abundant mangrove. H.M. the King told all relevant parties to work together and promote public awareness in preserving the forests according to the royal concept of sustainable natural resource conservation for the public benefits. This visit has inspired and recommitted our forest conservation and restoration efforts.

In addition, PTT has also received the grace of Her Royal Highness Princess Maha Chakri Sirindhorn in graciously bestowed the name of Rayong Advanced Institute of Science and Technology (RAIST) and Rayong Science Academy to be Vidyasirimedhi Institute and Kamnoetvidya Science Academy, respectively. Both academic institutions, to be opened in 2015, were established by PTT to develop human resources and research projects in science and advanced technology that will raise the body of scientific and technical knowledge in our country.

We have seen a number of key sustainability issues come to the fore. The global trends of political and government instability, environmental degradation, and poverty are as relevant as ever while regional integration that fosters inclusive growth and increases economic competitiveness is becoming more important as we enter the ASEAN Economic Community in 2015. In light of these challenges, PTT Group needs to operate by considering sustainability issues from all dimensions. Since 2011, PTT has chosen the Dow Jones Sustainability Indices (DJSI) Corporate Sustainability Assessment as the benchmark criteria to assess the sustainability performance and shape our sustainability programs. In 2014, PTT retained our membership in DJSI World - Oil and Gas Industry for the third consecutive year. In addition, our flagship companies, PTTEP, PTTGC, TOP, and IRPC were also included in the Dow Jones Sustainability Indices. This recognition reflects PTT Group's commitment in creating long-term values for our employees, customers, shareholders, communities, and society.

Organizational resilience is vital in a fast-changing and dynamic environment where PTT Group operates. The political situation last year and the decline in oil prices have affected many of our PTT Group businesses. We were able to continue our operations and ensure energy supply to the country during the political disruption by implementing our business continuity management plan and rigorous risk management process. Last year, two additional operations, our Gas Separation Plant (GSP) and Gas Transmission Pipeline (GTM) have been certified with ISO 22301: 2012 – Business Continuity Management System.



# CEO STATEMENT

Environmentally, PTT is a founding member of the CCAC Oil and Gas Methane Partnership under the United Nation Environment Program (UNEP) and joined the United States Environmental Protection Agency's (USEPA) Natural Gas Star Program which is one of the mechanisms to reduce overall methane emission under the Global Methane Initiative. PTT has set a goal to zero methane emissions in 2020 to reduce the emission of greenhouse gases into the environment on top of saving operating cost. In addition, we have registered over 185 Rai of forest in Rayong under Thailand Greenhouse Gas Management Organization's Thailand Voluntary Reduction Program to exchange knowledge and innovation in carbon reduction monitoring and to help support the government's efforts in reducing greenhouse gases.

I would like to extend my heartfelt thanks to all stakeholders for their continued support to PTT. I am fully confident that PTT will continue to operate for the benefit of the country and the energy security according to our missions. We are ready to grow our business alongside social and environmental responsibilities for the long-term vitality and sustainability of all.

A handwritten signature in black ink, appearing to read 'Pailin Chuchottaworn'.

**Pailin Chuchottaworn**

Chief Executive Officer & President



# PTT GROUP

PTT Public Company Limited or PTT is a state-owned enterprise under the supervision of the Ministry of Energy with the Ministry of Finance as a major shareholder. PTT is a listed company in the Stock Exchange of Thailand (SET).



GLOBAL CHEMICAL



CANADA



UNITED STATES



BRAZIL

## PTT Group Value Chain

As a state-owned enterprise, PTT's policy and business strategy are in line with the Ministry of Energy and the Ministry of Finance. PTT, therefore, plans to ensure the country's energy security by providing adequate energy supply at a fair and competitive price, investing to expand energy network and becoming a leader in offering quality products and services to meet customers' diverse needs as well as to add value to natural gas. PTT operates through PTT owned operated business and PTT Group companies including five flagship companies: PTTEP, PTTGC, TOP, IRPC, and GPSC.

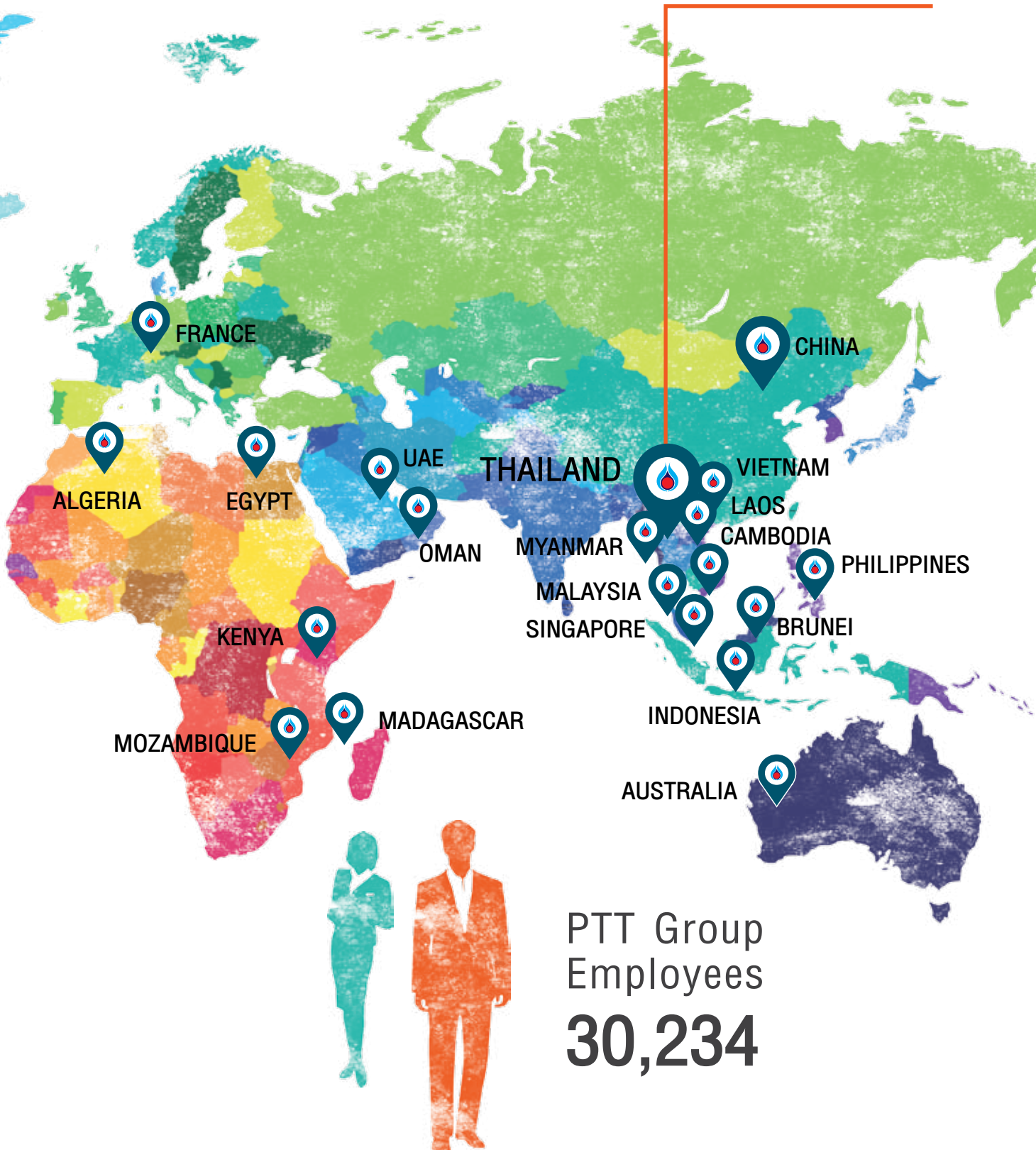
PTT Group operates along the entire hydrocarbon value chain. Primary energy is converted into useful energy for direct consumption such as in the transportation sector and into valued added products in the petrochemical industry. PTT Group is a resource owner and value creator in different segments of the value chain. The International Trading Business Unit acts as the optimizer for PTT Group. In addition, PTT Group operates and invests in green energy segment to become a leader in clean energy innovation.



PTT Group has  
investments in  
**23** countries  
globally.

Investments are made in both  
upstream and downstream  
petroleum businesses through  
PTT own operations and PTT Group  
companies.

Head Office, Bangkok, Thailand



# PTT GROUP

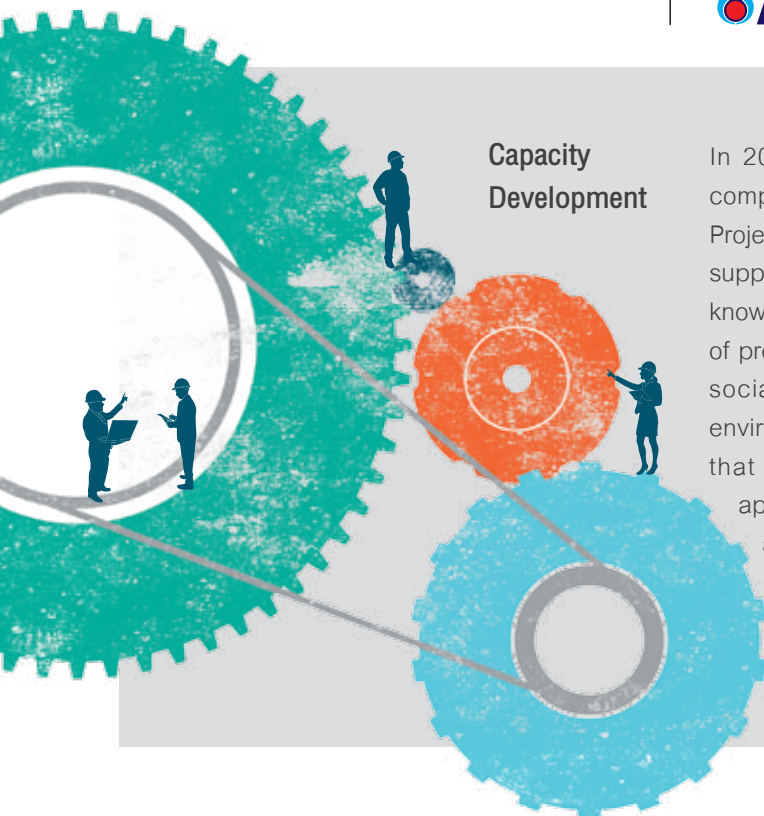
## Sustainability Performance

PTT and flagship companies were listed as members of Dow Jones Sustainability Indices

MEMBER OF

**Dow Jones  
Sustainability Indices**

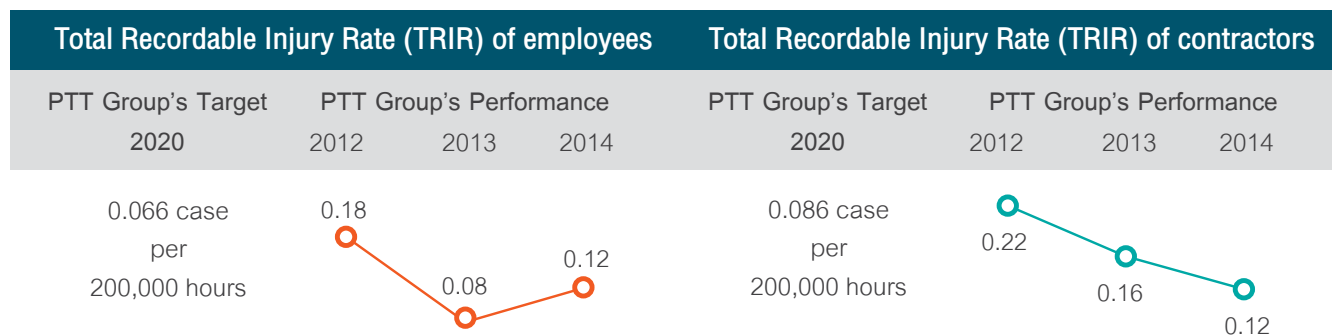
In Collaboration with RobecoSAM



### Capacity Development

In 2014, a total of 45 procurement staff from 13 flagship companies participated in PTT Group's Procurement Pioneer Project. The project aims to improve procurement practice and supplier selection process by equipping procurement staff with knowledge and skills to analyze and plan for strategic sourcing of products and services as well as to integrate environmental, social, and governance (ESG) criteria in order to reduce environmental, social, and economic impacts. It is estimated that this project enabled PTT Group to reduce cost for approximately 99 million baht per year. In addition, PTT Group also provided suppliers trainings on PTT's policies and strategic direction, guidelines to sustainable business and green procurement to raise awareness and encourage future collaborations.

### PTT Group Employees and Contractors



Remark: • The scope covers operations of PTT and flagship companies i.e. PTTEP, PTTGC, TOP, and IRPC.  
• 2012 and 2013 information do not include IRPC performance

## Reforestation Project to Honor His Majesty the King

To honor His Majesty the King on the auspicious occasion of 50<sup>th</sup> year accession to the throne, PTT has participated in the Reforestation Project to celebrate HM the King's Golden Jubilee since 1994 and has continually carried on the mission until now. Researches have shown that the 1 million-Rai forest from the project has created benefits including:

Reforestation Project  
to Honor  
His Majesty the King

**1**

million Rai

**30.27**

million tons  
of carbon dioxide  
absorption

**5,480**

million baht  
worth of  
carbon capture

the release of  
**24.22**

million tons  
of oxygen to  
the atmosphere

**7,830**

million baht  
worth of benefits  
gained by  
the communities

at the average of

**391.5**

million baht per year

and improvement in quality of life of the surrounding communities to nurture and protect the forested areas.

Carbon captured  
1.89 million tons of  
carbon dioxide per year

PTT Group's  
accumulated  
forest areas



**1,110,000 Rai**

2013



**1,173,600 Rai**

2014

Moreover, PTT Group sees opportunities to use knowledge in reforestation to build the PTT Forestry Institute with the main mission to enhance sustainable forest management. PTT has revised the target to add in another 1 million Rai of reforested area by the year 2024 which will be able to adsorb 2.1 million tons of carbon dioxide per year along with building awareness about the value of forests and stakeholder engagement through initiatives such as planting trees to increase greenspace.



Forest in the Park at Vachirabenjatas Park



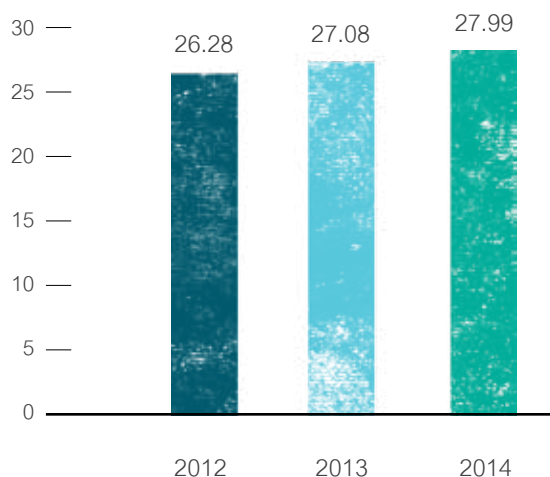
## GHG Emission

PTT Group's  
2020 Goal

Reduce emission intensity  
for 5 percent compared to  
2012 level

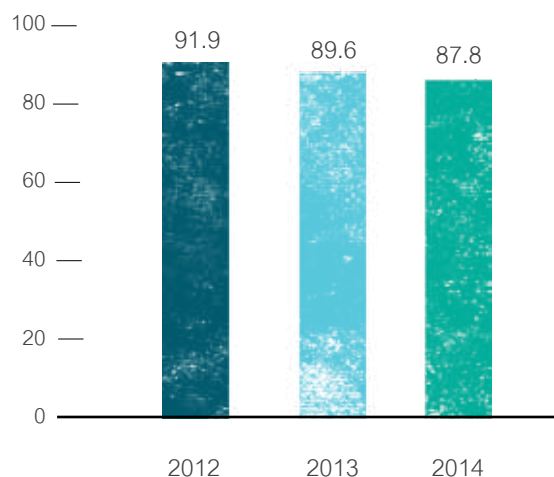
### PTT Group's direct and indirect GHG emissions

(million tons of carbon dioxide equivalent)



### GHG intensity

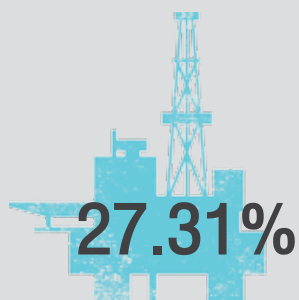
(kilograms of carbon dioxide equivalent  
per barrel of oil equivalent)



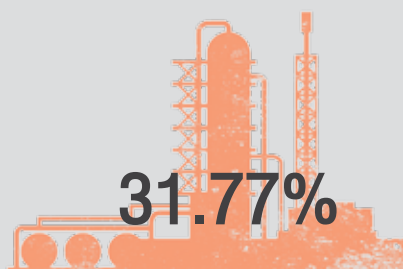
Remark: The scope covers operations of PTT and flagship companies i.e. PTTEP, PTTGC, TOP, and IRPC.

### Reduction from 2013 to 2014

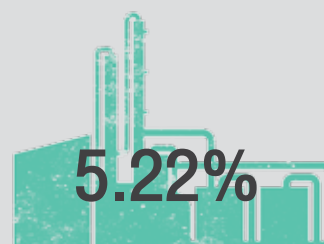
#### Carbon Intensity Reduction by Business Type



Oil and gas production



Refinery

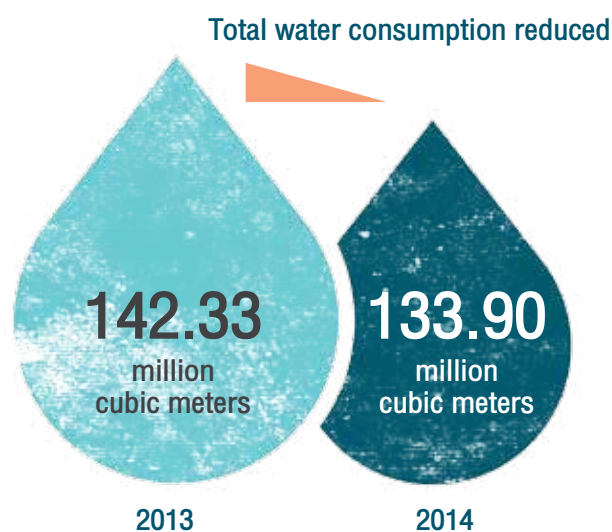


Petrochemical

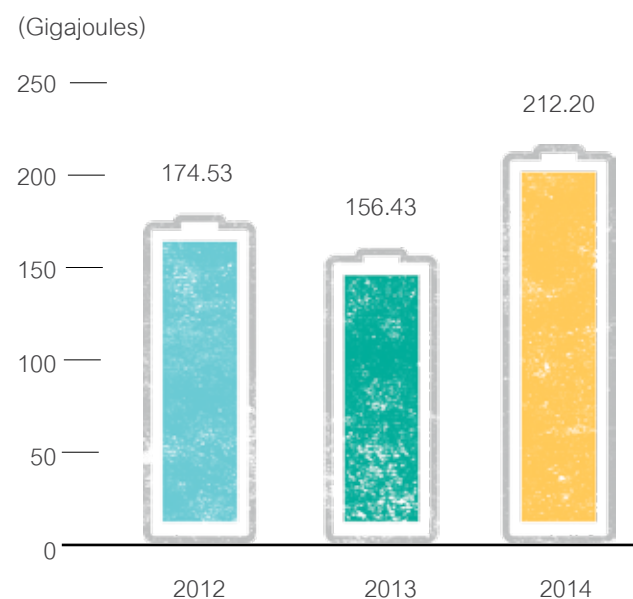
Remark: The scope covers operations of PTT and flagship companies i.e. PTTEP, PTTGC, TOP, and IRPC.

## Water Use Reduction

PTT Group is committed to reducing water consumption in high risk areas and controlling water usage in areas with high water consumption.

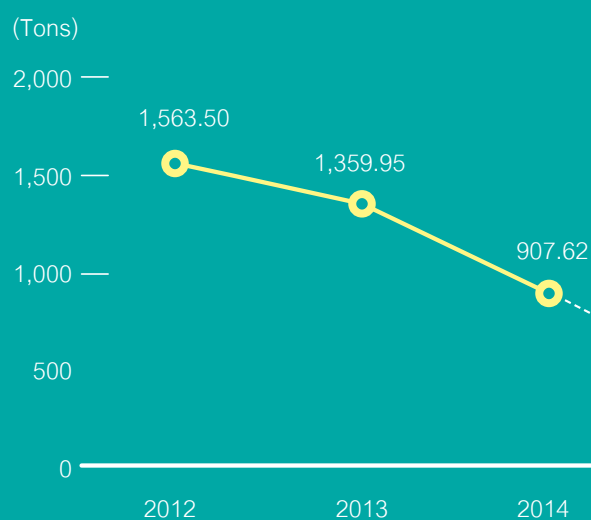


## Energy Consumption within the Organization



Remark: The scope covers operations of PTT and flagship companies i.e. PTTEP, PTTGC, TOP, and IRPC.

## Reduction of Hazardous Waste to Landfill



PTT Group continually works to reduce hazardous waste to landfill and aims for

# zero

hazardous waste to landfill by 2020.

Remark: The scope covers operations of PTT and flagship companies including PTTEP, PTTGC, TOP, and IRPC. In 2013, the scope was extended to PTTGC and IRPC. By 2014, TOP was included in the scope.



## Sustainable Development

PTT's vision is to become a Thai Premier Multinational Energy Company. As Thailand's national oil company, PTT's missions are to strengthen Thailand's energy security by placing the utmost importance in the benefits of all stakeholders. Our responsibility is to produce, innovate and provide energy-related products as well as instill the spirit of energy conservation and environmental responsibility to the wider public.

PTT's business covers the entire value chain, from upstream to downstream, covering both domestic and international. We grow our business by adding value to hydrocarbons and innovating new energy solutions through our own operated business as well as our investment businesses within the PTT Group. PTT's strategic framework aims to balance three dimensions to create a sustainable organization. The three dimensions are High Performance Organization (HPO); Corporate Governance (CG), and Corporate Social Responsibility (CSR).

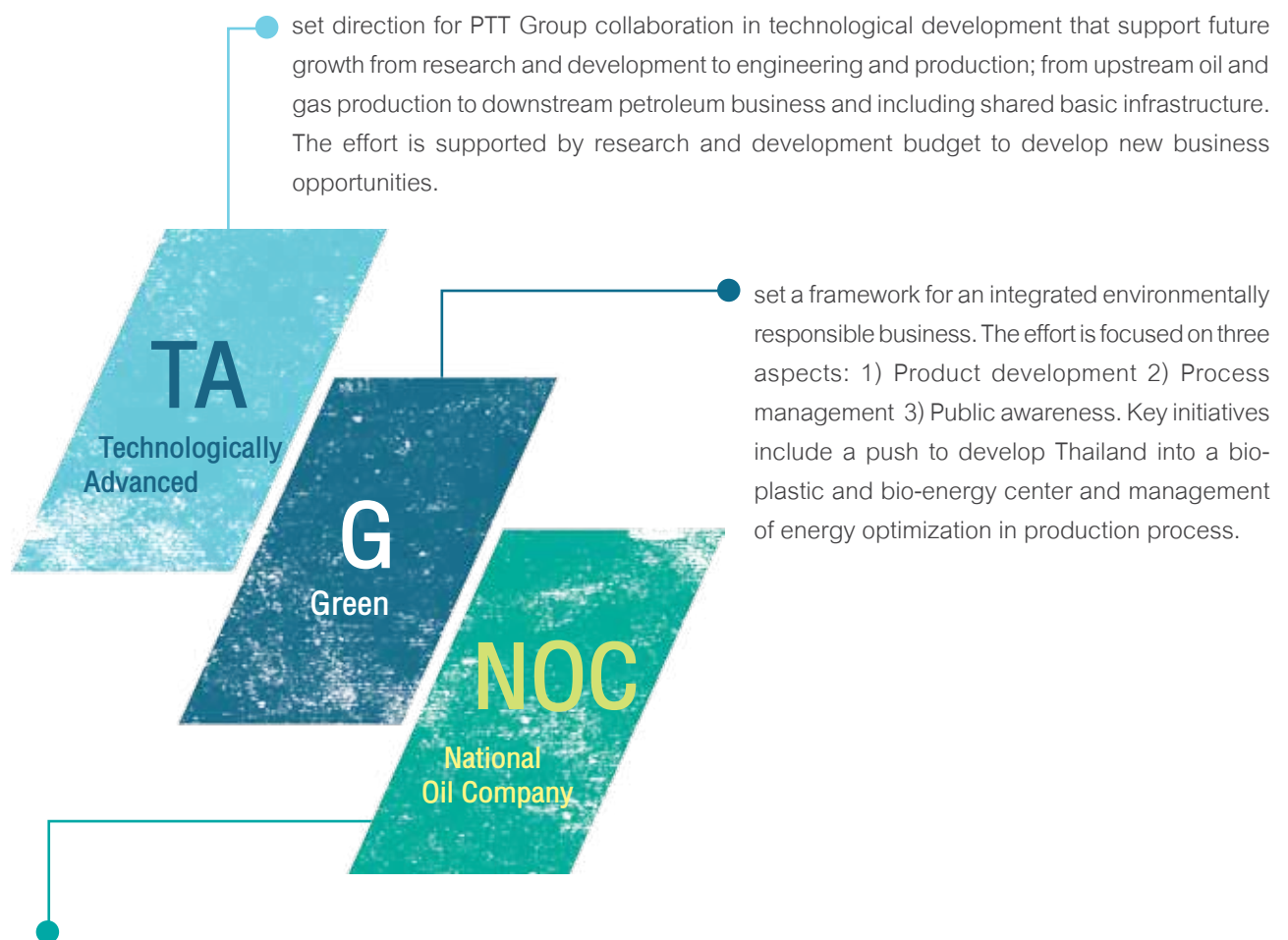


**PTT STRATEGIC FRAMEWORK**



## Strategic Direction

PTT Group's strategic direction is TAGNOC (Technologically Advanced and Green National Oil Company) which aligns our business directions and efforts to develop a knowledge-based business from our current position as a resource-based business.



set expectations to provide energy security and economic prosperity for the country. Key activities include integrated gas supply management, Creating Shared Value for the society, preparing PTT Group for the ASEAN Economic Community, expanding investment in Myanmar, managing PTT Group portfolio, and pursuing operational excellence.

- PTT Group Creating Shared Value (CSV) effort aims to develop a business model that closely aligns community development effort with business strategy and direction.
- Integrated gas supply management sets to create continuity between exploration and production and natural gas and raw material sourcing to support the country's demand.
- PTT Group portfolio management seeks to manage investment in both upstream and downstream business to achieve four ends: growth, energy security, credit rating, and return on invested capital.

## SUSTAINABLE GOVERNANCE

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SUSTAINABLE



GOVERNANCE

The Infrastructure Business Group was established in October 2013 to support PTT's business expansion and enhance PTT Group's management. The establishment of the Infrastructure Business Group provides a new growth story for PTT, in which we can create new opportunities and add value to the existing business. The Business Group is built upon the existing knowledge base as well as expertise of PTT's personnel, and allows for a more comprehensive development of the infrastructure business. Moreover, it also helps PTT to meet stakeholders' demand for greater transparency especially in the asset management with regards to infrastructure such as the separation of natural gas transmission system.

The Infrastructure Business Group's operation can be divided into two main business areas which are Infrastructure and Utility Management Functional Group and Operational Management for Sustainability Functional Group. **The Infrastructure and Utility Management Functional Group** aims at strengthening stability within PTT Group as they are responsible for asset management including natural gas transmission system and natural gas management for vehicles. This is achieved by grouping the management of companies in PTT Group, which provides infrastructure services to PTT Group such as Global Power Synergy Company Limited (GPSC) and PTT AIE Industrial Land, in order to identify new opportunities for value creation in the asset management businesses. Similarly, **the Operational Management for Sustainability Functional Group** is responsible for the development of effective and sustainable operation systems as well as the provision of engineering and construction services to PTT. They are, therefore, tasked with managing companies in PTT Group which are responsible for such services.

We hope to develop the Infrastructure Business Group to become the center of excellence in engineering, management system and professional project management in the future, as we seek new opportunities and business for growth in Thailand and overseas. This is in addition to our aim to manage PTT's assets, which are essential to Thailand's energy security, with effectiveness, transparency and clarity so that our stakeholders may remain fully confident in our operation.

## Establishment of the Infrastructure Business Group

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**Surong Bulakul**

Chief Operating Officer Infrastructure





## Good Corporate Governance

PTT adheres to the principles of good governance, transparency, accuracy, and international standards to build a framework of leadership accountability amongst the PTT Board of Directors and Executives. This leads to an increase in competitive capacity, prevents conflicts of interest that may arise, and builds stakeholders' and investors' confidence.



## PTT Group Sustainability Governance

The overall responsibility of PTT Group's sustainability performance lies with the Group Sustainability Committee, which was renamed the Sustainability Alignment Committee (SAC) in 2014 to better and more closely integrate sustainability management within PTT Group. The Senior Executive Vice President of the Sustainability Management and Project Engineering serves as the Chair of the Committee, with committee members from various Business Units and from flagship companies – PTTEP, PTTGC, TOP, IRPC, and GPSC. The Committee meets regularly at least once every quarter to jointly establish sustainability-related plans and strategies and to monitor the progress.

The PTT Group adopts the PTT Group Sustainability Management Framework (PTT Group SM Framework) in its overall sustainability management. As part of the 3-year assessment cycle, in 2014, PTT conducted an external assessment of the 10 Elements within the Framework for 12 operational areas. The 2014 external assessment results can be found on pages 69-70 of this report.

### PTT Group Sustainability Management Framework





## Corporate Governance and Code of Ethics Handbook

Under the guidance of the Corporate Governance and Code of Ethics Handbook, PTT trains all employees on issues related to: governance, dealing with information disclosure, transparency, and leadership accountability; and business ethics, concerning anti-corruption, corporate social responsibility, international human rights principles and conflicts of interest. All employees are expected to acknowledge that they have read and understand the content in CG Handbook in writing prior to performing their duties. They must comply with the standards indicated and submit a PTT's Conflict of Interest Disclosure Form annually.

In 2014, we announced the PTT and PTT Group Anti-Corruption Policy governing the proper conduct of PTT personnel for the purpose of creating confidence among stakeholders,

ensuring commitment and effectiveness across the organization. Moreover, anti-corruption management and investigation procedures will be presented in all processes. PTT was endorsed by the Private Sector Collective Action Coalition against Corruption Council (CAC) on October 3, 2014 to be a member in the Private Sector Collective Action Coalition. This recognition signifies that PTT has put in place policies and process to ensure against corruption risks. During the past year, no significant conflicts of interest were found, and no major grievances related to unethical conduct were confirmed after investigation.

## Human Rights

Beyond respecting international human rights principles as indicated in the CG Handbook, Human Rights constitutes an Element of the PTT Group SM Framework, which further consists of: Human Rights Guidelines; Training, Monitoring and Reporting, and Public Consultation and Resettlement. PTT Group conducts business by adhering to labor laws at the minimum, and also operates according to the UN Universal Declaration of Human Rights, UN Global Compact Principles 1 and 2, and the UN Framework and Guiding Principles on Business and Human Rights (Ruggie Framework).

In 2014, human rights performance and processes were assessed as part of the sustainability management external assessment to ensure alignment with the international principles and PTT Group SM Framework. Furthermore, PTT will conduct human rights risk assessments for its operations in Thailand and overseas in 2015.

## Stakeholder Engagement (G4-24, G4-25, G4-26, G4-27)

PTT engages with its stakeholders in a variety of ways throughout the year to encourage improvement in its operations, reporting, and information disclosure.

The table below presents examples of PTT's stakeholder engagement activities in 2014 based on PTT's six stakeholder groups. For more information on our stakeholder engagements, please visit PTT's website.

Stakeholder	Stakeholder Interest and PTT Response
 Country	<ul style="list-style-type: none"> <li>Published White Paper entitled "Vision and Policy of Thailand's Energy Reform," to present to the Deputy Economic Chief of the National Council for Peace and Order (NCPO), on 28 May, 2014.</li> <li>Prepared important issues related to PTT to present to the NCPO Platform, and participated in various meetings by NCPO concerning energy reform direction and issues, to be followed-up by relevant PTT divisions.</li> </ul>
 Community and Society	<ul style="list-style-type: none"> <li>Various grievance channels for communities in areas surrounding operations were established. Those receiving direct impacts on the ground were informed of the appropriate channels to report their grievances or impacts from construction-related issues by their community leaders, civil servants, or local media. In 2014, the majority of grievances occurred during construction and were reported via telephone to the Customer Relations Center (Call Center 1365). PTT has resolved all grievance issues and continues to communicate with relevant parties to ensure their satisfaction with the process.</li> </ul>
 Shareholders	<ul style="list-style-type: none"> <li>Organized an Annual Shareholders General Meeting as required by the AGM Checklist, which was established by the Thai Investors Association to raise the quality of the conference by encouraging businesses to factor in the equal rights of all shareholders while complying with international standards. In 2014 PTT received the maximum 100 score for the AGM Checklist assessment – in the "Excellent" range.</li> </ul>
 Customers	<ul style="list-style-type: none"> <li>Conducted customer satisfaction surveys to improve customer relations management and ensure that their needs and expectations are met. Received grievances through numerous channels such as the Customer Relations Center.</li> </ul>
 Partners	<ul style="list-style-type: none"> <li>Organized Supplier Relationship Seminar to train and communicate policy, business direction, guidelines to sustainable business, and green procurement, etc.</li> </ul>
 Employees	<ul style="list-style-type: none"> <li>Improved the operational efficiency of state enterprises, supported and developed labor relations, revised rules and regulations of the PTT Joint Consultant Committee to better serve employers, employees, and state enterprises; conducted consultations on employee or union grievances, including issues related to disciplinary action, and held monthly consultations to evaluate ways of continuously improving the hiring process.</li> <li>Evaluated all suggestions and grievances from management and employees on issues related to the hiring process, benefits, and risk management through the Joint Consultant Committee, which was established in provincial operations areas such as the Gas Separation Plant in Rayong and Khanom, and the Gas Transmission Pipeline in Chonburi. Membership in the Committee consists of highest-level managers who act as the Chair and employee representative in their respective areas of operations.</li> </ul>



## Risk and Crisis Management

### Managing Risk for Business Sustainability

PTT believes in the utmost importance of risk management given that risks associated with changing business conditions may impact the company's ability to achieve its business targets and objectives. PTT has put in place a comprehensive risk management system to not only manages business risks, but also to respond to stakeholder's needs and identify opportunities to increase business value. In 2014, PTT carried out the risk management activities as follows.



### Managing Price Volatility of Raw Materials and Products

The price of raw materials and products such as natural gas, condensates, crude oil, and refined oil and petrochemical fluctuates according to market conditions, which in turn affects the operations of PTT Group.

To manage the price fluctuations, PTT Group has established the Price Strategy and Risk Management Working Group to analyze global oil prices and to manage risks related to the price of raw materials and products. PTT manages product purchase and sale costs through derivative contracts with suppliers as stipulated by PTT's policy. PTT Group conducts business plan based on scenario planning by running different scenarios of economic expansion and oil price levels, to prepare appropriate response plans for future changes and uncertainties.

Additionally, the PTT Group Financial Stress Test assesses risks by running various possible scenarios factoring in uncertainties, such as global economic conditions, Thailand's political and economic situation, exchange rates, energy demand, and calls for energy policy reform, to suitably prepare for and manage potential risks and disruptions.



## Managing Investment Risks for Sustainable Growth

Investing in new energy sources and renewable energy to increase the nation's energy security, leveraging existing business and finding new sustainable growth opportunities all run the risks that return on investment may not achieve the targeted level.

PTT manages risks associated with investments through the Strategic Investment Management (SIM) Process which is broken down into four stages: Investment Planning, Investment Analysis, Investment Process, and Commercial Processes. In addition, PTT established the

Investment Management Committee, comprising executives with expertise in different areas to evaluate and screen investments prior to approval by PTT Management Committee and the Board of Directors. Furthermore, the Investment Management Committee is responsible for monitoring investments and changes in various factors that impact investment objectives. These processes allow PTT to quickly and effectively resolve problems that may arise from investment risks.

## Managing Natural Gas Supply to Ensure Energy Security

Uncertainties of the domestic and global economy, price volatility of oil and liquefied natural gas (LNG), unexpected changes in future natural gas demand, decreases in Thailand's natural gas reserves, regional natural gas procurement negotiations, the inability to meet increased demand and to deliver natural gas according to the amount required by production contracts – all have the potential to affect demand for natural gas as well as PTT's financial performance.

To ensure energy security and manage against these risks, PTT follows movements in the sourcing process and demand for natural gas, and closely collaborates with suppliers and buyers to establish an effective short-term and long-term natural gas procurement plan, where crisis resolution strategies are also included in these discussions.

## Building Public Trust

Social, economics, and political uncertainties; energy policy, regulations, and governance mechanism; changing stakeholder expectations and negative media attention – all have the potential to impact public perception and erode their confidence in PTT which could impact PTT's operations as well as future expansions.

Accordingly, PTT reviews its current business operations and specified business directions to create balance and shared value between business, society, and the environment under the Creating Shared Value (CSV) concept. Branding and reputation are managed in line with business direction, which emphasizes analysis and forecasting; mass communications via main media channels and online platforms, service stations and Café Amazon; and public performance disclosure through participation in seminars and press events to foster genuine and factual understanding of energy issues, products, services, and PTT's business operations amongst the public.





## Environment and Climate Change Risks

PTT works to reduce our environment and climate change related-risks by adhering to the precautionary approach as defined by the Principles of the United Nations Global Compact (UNGC). PTT Group's Quality, Security, Safety, Health, and Environment (QSHE) Policy and the PTT Group Security, Safety, Health, and Environment Management Standards (SSHE MS) serve as the minimum basis upon which all business units and PTT Group subsidiaries must operate in this regard. In addition, we have set strategic targets to reduce the environmental footprint of our products throughout their entire life cycle and to improve our operational eco-efficiency.

Regarding climate change, our assessment of risks and opportunities for long-term business operations include factors such as potential legislations on greenhouse gas emissions, changes in consumer behaviour, water shortages for production and consumption, and the increase in frequency and intensity of natural disasters. While these risks may only affect financial and physical aspects of the company at a low level, we nevertheless aim to contribute to global climate change efforts by declaring our commitments, through the CDP, to manage its greenhouse gas emissions as follows:



CO<sub>2</sub>

Continuous  
public disclosure  
of greenhouse gas  
emissions data

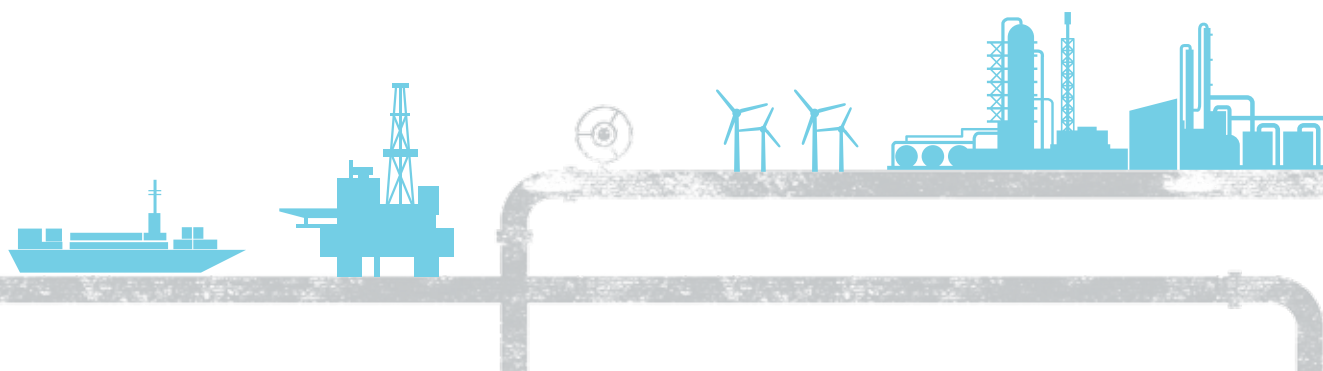
Responsibly  
engage policy maker  
on climate change  
policy

Integrate carbon  
pricing into  
investment decisions

In reducing our environmental impacts, we considered the cost effectiveness of each mitigation activities as well as the potential risks to the environment.

## Business Continuity Management

In addition to corporate risk management, PTT has established a Business Continuity Management Plan (BCM) to prepare for any emergencies and crises that may occur. During the political demonstrations in 2014, PTT employed the BCM Plan for a period of 113 days – the longest since the Business Continuity Management System has been developed. Nevertheless, PTT was able to continue its business operations as normal, ensuring sufficient and reliable supply of energy for our suppliers and the country during the entire period of political disruption.





## VALUE CHAIN

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From the small State Owned Enterprise with little capital and limited knowledge of petroleum business, PTT has gradually created and collected the knowledge assets necessary to build an integrated petroleum business without being a burden on the Government. PTT builds energy security for the nation, reduces foreign currency loss and regularly generates income for the country.

Most people know PTT from our oil business, which is our main touch point with the consumers. In this market, we are only one of the 40 players who have registered with the Department of Energy Business in accordance with Section 7 regulation. Our market share in the retail market is around 39 percent. Our goal is not to maximize market share but to maintain a large enough market share to ensure energy security of the nation. We operate throughout the value chain from sourcing, storing, transporting, to retailing to ensure that everyone can have equal access to quality products and services, even in remote areas. Moreover, we aim to respond to stakeholders' needs in the Government sector; Industrial sector and consumers through research and development of a diverse range of quality and environmentally friendly products and services, such as unleaded gasoline, gasohol, biodiesel, and PTT HyForce Premium Diesel.

For business development, we hope that PTT service station is the preferred consumer's choice. We, therefore, developed our service stations to meet the different needs of all customers. Not only creating a clean and safe area with less environmental impact, we also extend our offerings to other businesses including lubricating products, Café Amazon, and supporting local community careers by providing service stations as channel to distribute local products in order to serve various needs of consumers through our PTT Life Station.

In conclusion, we work to maintain the balance between serving our mission to provide energy security and operating in a highly competitive market in order to grow sustainably along with the community, society, and environment.

## Conducting Business as the National Energy Company

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**Sarun Rungkasiri**

Chief Operation Officer,  
Downstream Petroleum Business Group



## Supply Chain Management

PTT works to manage our supply chain by reducing the potential impacts to the business, society and the environment from the goods and services we procure and from the operations and governance of our buyers and suppliers. We also encourage our suppliers to improve their operational performance in order to manage reputational risks and enhance our long-term competitiveness.

In 2014, the Environment Social and Governance Risk Assessment Tool and risk evaluation criteria were revised to include the likelihood and impacts of sustainability-related risks from suppliers and buyers, namely environmental, safety, and reputational risks. Suppliers were classified according to product and service type. In total, 284 suppliers

were assessed to identify high-risk suppliers. The Assessment Tool was introduced to employees through training, whereas suppliers were informed about sustainable supply chain management via supplier seminars. The assessment process enabled PTT to manage our high-risk suppliers much more efficiently. In 2014, there were no cases of suppliers who were not in compliance with labor laws.

Furthermore, to strengthen supplier operational efficiency, PTT organized a Supplier Relationship Seminar to communicate its business policy and direction, and organized a workshop to improve collaboration with suppliers. As a result, supplier satisfaction towards the procurement unit was measured at 86.55 percent.

We continue to find ways to optimize our supply chain to reduce costs, and generate new business opportunities by focusing on collaboration between PTT, our suppliers and subsidiaries on various projects, such as the Petrochemical and Refining Integrated Supply Chain Management (PRISM) and PTT Group Logistics Master Plan (GLM). We focus on the collaboration among PTT, suppliers, and oil refineries and petrochemical plants in our Downstream Business that emphasizes efficiency improvement, value creation for PTT Group companies, costs reduction, and customer satisfaction improvement through process improvements across the entire supply chain to create competitive advantage on the supply side.

### Managing Risks in Sourcing Petroleum to Ensure Energy Security for the Country

An important mission of the International Trading Business is ensuring the country's energy security both in terms of supply and quality. Among other petroleum products, we are tasked with sourcing crude oil, fuel oil, and liquefied petroleum gas (LPG) to meet the country's demand. This mission is wider than PTT's operations, on behalf of the government, we also source energy products that other suppliers deem uneconomic so that consumers are not affected by shortages. We work closely

with partners within and outside of PTT Group, from forecasting demand; negotiating contracts; and monitoring, analyzing, and managing risks. We manage risks by putting in place systems that ensure we only deal with suppliers with solid reputations, managing price volatility, reducing risks associated with freight transport using PTT Group Ship Vetting System that has the same rigorous standard as leading international oil companies. Our ship vetting process ensures the expected product quality, safe freight transport and safeguards against potential environmental impacts to communities around the ports. We have working committees to continually monitor and assess risks and report the situations to the Enterprise Risk Management Committee on a monthly basis to ensure that we successfully complete our mission to provide energy security under normal condition and even in times of crisis.

#### Boobpha Amornkiatkajorn

Senior Executive  
Vice President,  
International  
Trading  
Business Unit





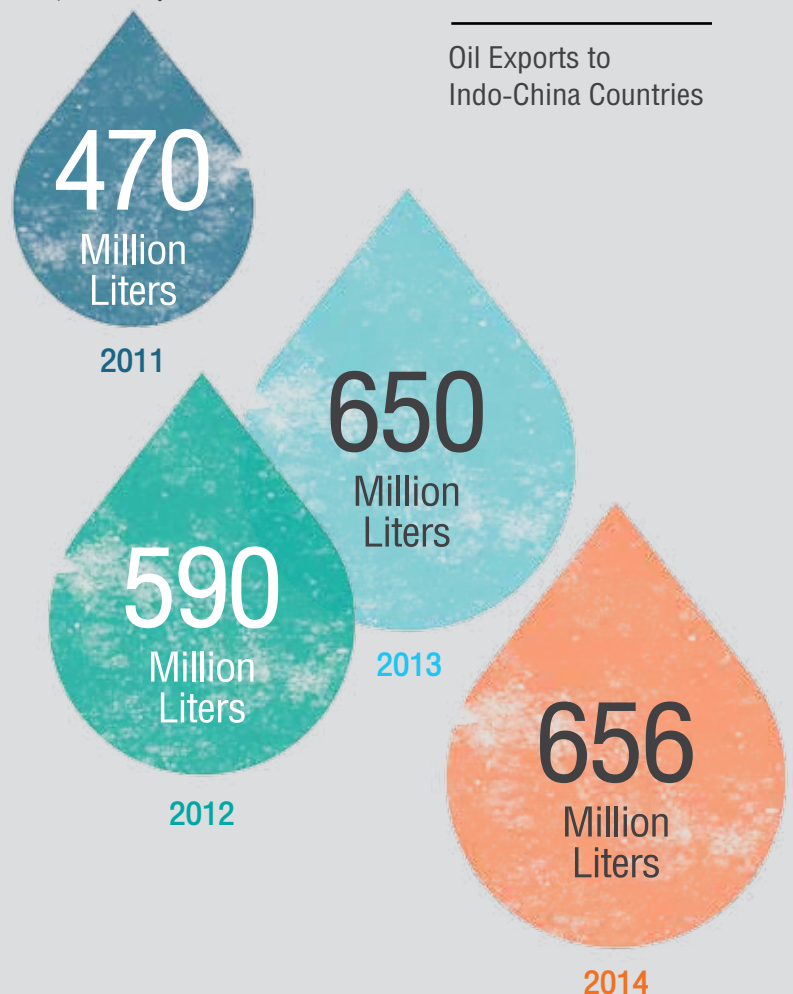
In 2014, PTT together with our suppliers and Downstream Businesses involved in the PRISM Project collaborated to refine the petrochemical outlook forecast used in business strategy planning within the PTT Group. The estimates were found to be closely aligned to real prices, and therefore the margin of error was reduced from 10 percent to 5 percent for greater accuracy. PTT subsequently organized a knowledge sharing seminar on oil prices, petrochemical outlooks, and global market trends for suppliers and PTT Group personnel. This is considered a mean of skill development to build suppliers and personnel awareness for the changing market conditions.

To create new business opportunities, the Bio-Hub Group under the PRISM Project is working to generate demand by co-developing new uses of bioplastics with customers, while working on creating economy of scale in the supply of bioplastics. Simultaneously, Bio-Hub has pushed to turn the PTT Research and Technology Institute into a Bio Solution Center, to encourage bioplastic use and community awareness on environmental impact reduction.

For the GLM Project, PTT has initiated a Green Logistics initiative that aims to reduce carbon dioxide from transportation and encourages contractors to consider the environmental and social impacts of their operations. Consequently, in 2014 PTT reduced logistical costs by 414 million baht and decreased its carbon dioxide emissions from transportation by approximately 20,834 tons. This is equivalent to reducing fuel use by approximately 5.4 million baht per year, and by extension, creates satisfaction amongst customers, suppliers, and relevant contractors throughout the entire logistics process.

### ASEAN Economic Community (AEC)

PTT Group is moving to expand our market in ASEAN by establishing a customer base and creating brand loyalty in the retail market in Cambodia, Laos, and Myanmar. As part of our objectives of becoming a leading brand in the region, we are installing fuel service stations offering the same standards as those in Thailand through our oil refinery networks. Additionally, we are producing petroleum products and oil for export to Indo-China countries, aiming to obtain 2 percent market share in each country. In 2014 the amount of oil exports to Indo-China countries have increased from previous years.

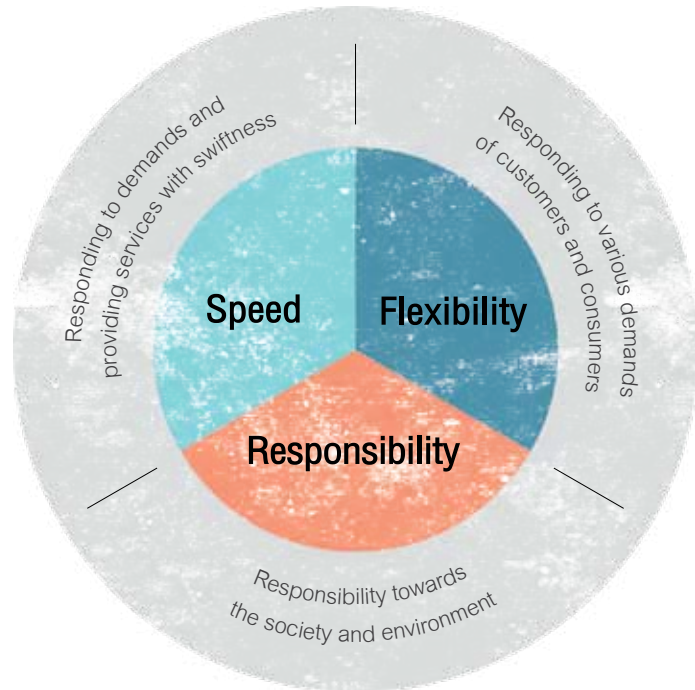


Regarding logistics, the GLM Project has organized an AEC Logistics Master Plan Initiative to prepare for regional competitiveness. The Plan focuses on understanding the particular country's logistics and ways to appropriately facilitate the petroleum and petrochemical business in Indo-China. In 2014, study was conducted for Cambodia. We will conduct studies for Laos and Myanmar in 2015.

## Products and Customers


### Products and Services

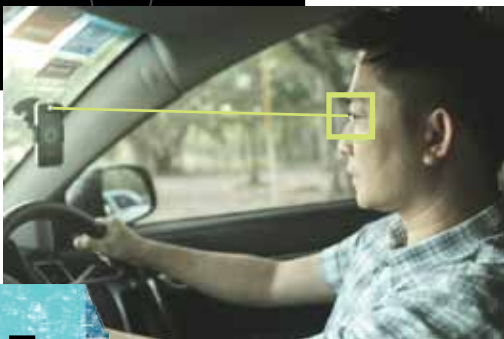
Delivering quality products and services is one of PTT Group's main missions. PTT is committed to offering products and services with responsibilities towards the society and environment, in addition to innovating new products and services to meet the customers' changing demands and lifestyles. This is achieved by placing an emphasis on Speed, Flexibility and Responsibility.



### Drive Awake Application

**72,800**

the number of  downloads for Drive Awake Application as of the end of December 2014



**7  
awards**

received for mobile application development from 4 countries

With the rapidly changing customers' behaviors, PTT has to consistently adjust to new situations, by recognizing, understanding, and anticipating consumer demands before other service providers. Having the largest market share is partly the result of PTT's effort and dedication in understanding the consumers by meeting various demands with speed and responsibility. These include being the leader in launching environmentally-friendly products, implementing self-certified environmental labelling, the PTT Group Eco-Label for Products and Services, and providing a One Stop Service in our service stations. For instance, our service station is equipped with different facilities and amenities such as convenience stores, banking branches, food stalls, etc. depending on the suitability and conditions of each area.

In order to meet the need of the modern consumers, PTT has developed a Drive Awake mobile application which enables a smartphone to detect the driver's eyes and sound an alarm when the driver's eyes are closed for more than 2 seconds. The application will also guide the driver to the nearest Amazon Café to rest or stop for a coffee, preventing potential car accidents due to fatigue. Not only is such initiative carried out to meet the modern lifestyle, it also serves as one of many ways that PTT has added value to its products.

In terms of product stewardship, PTT has studied and conducted a life cycle assessment (LCA) and water footprint assessment of PTT's essential products and products with high water-related risks. These essential products are the organization's well known main products, which are considered based on external perception, stakeholder's opinions and the acceptance level with respect to the expertise and income received from the products/services. As for the products with high water-related risk, they are considered based on the impact level and likelihood of water

shortage in the production process. These life cycle and water footprint assessments have helped PTT to track the products' environmental impact throughout their life cycle along the supply chain. The results obtained are also used for planning of eco-efficiency programs for management of other environmental issues, leading to a sustainable development in the future.

#### Performance in 2014

Completed the life cycle assessments of products including Methane, Ethane, Propane, Butane, Natural Gas Liquid (NGL), Liquid Petroleum Gas (LPG) and High Density Polyethylene (HDPE) for a total of 27 product grades

#### Implementation plan for 2015

Conduct the water footprint assessment of products including Methane, Ethane, Propane, Butane, Natural Gas Liquid (NGL), Liquid Petroleum Gas (LPG) and High Density Polyethylene (HDPE) for a total of 27 product grades

To drive stakeholders in the supply chain to be more aware of green products and services, especially those that contain plastics, PTT has created PTT Group Green for Life label to enhance marketing and environmentally-friendly image. This also helps customers in distinguishing environmentally-friendly products, which will result in more sales of green products.

## Customer Management

In order to maintain the confidence and satisfaction of customers, PTT listens to the opinions and feedbacks from customers (Voice of Customer) by establishing channels that can be accessed at all times such as website, social media, customer service centre, etc. The information received is daily tracked for problem-solving and responsive communication with the customers. Moreover, in 2014, PTT has introduced the Knowledge Management System to manage the feedbacks received, where the Service Station Development and Management Department is responsible for compiling repeated grievances, problem-solving results, long-term solutions and customer satisfaction to be stored in the Knowledge Management System. Moreover, the System encourages effective exchanges of information between different functions, partners, suppliers, retailers as well as service stations in order to accomplish further improvement.

## Products and Services which have received PTT Green for Life labels

### Products



#### PTT Racing Formula Biosyn

Lubricant oil for the environment, for speedboat's two stroke engine. Up to 67 percent biodegradable within 28 days



#### LPG Composite Tank

LPG Composite Tank reduces environmental impact throughout its life cycle by more than 42.5 percent. Its lifespan is longer as compared to iron tank and also designed to be dismantled for disposal where up to 50 percent of the material is reusable

### Services

#### Nawanakorn Service Station

Environmentally friendly and able to save energy by more than 30 percent of all activities in the office

#### Chiang Karn Service Station

Environmentally friendly by recycling its discharged water by over 40 percent

#### Ladkrabang

#### NGV Service Station

Reduced electricity consumption by 29.68 percent; Achieved 0.004 percent of energy use from renewable sources; Reduced waste to be disposed by 58.44 percent; Reduced greenhouse gas emission by 10.29 percent as compared to other PTT NGV service stations

## Customer Satisfaction Survey



(Percent)

	Oil	Natural Gas	International Trading
Target in 2014	89.5	> 89.0	90.0
Satisfaction level in 2014	88.4	89.4	91.4
Target in 2015	95.0	91.2	90.0

## Low Carbon Fuels

(million liter)

### Biofuels in Thailand

Sales volume in	Bio Gasoline (Gasohol)	High Speed Diesel
2012	1,569	6,161
2013	2,540	6,331
2014	2,748	6,538
Estimated sales volume in 2015	2,981	6,890

Estimated reduction of indirect greenhouse gas emission at 1.8 million tons carbondioxide equivalent



## OPERATIONAL EXCELLENCE

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## Environment

PTT is aware of the limited natural resource and determined to protect and maintain the invaluable environment. Thus, PTT commits to improve the environmental management by setting short and long-term targets and monitor performance through indicators that cover all aspects of the environmental issues in order to reduce impacts on stakeholders arising from PTT Group's activities.

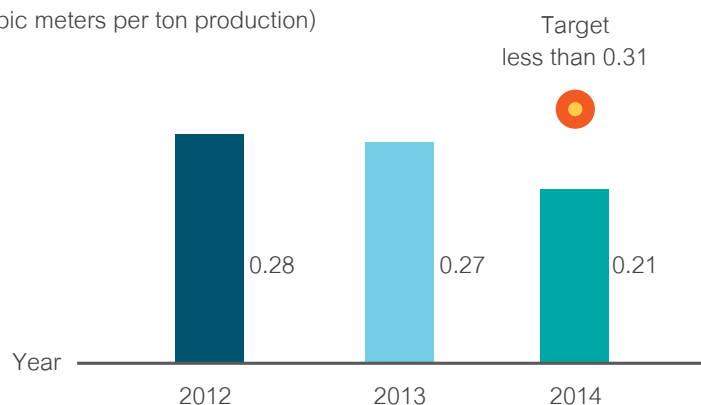
### Integrated Water Management

Water is a basic need for communities, society, and environment as well as an essential component for business operation. PTT effectively manages water in order to prevent risks that would create impacts on all stakeholder groups. One of the issues relates to the need of water for consumption and industrial usage is the increase in water demand in Chonburi and Rayong provinces which is estimated to increase 12 percent per year. PTT Group Water Management Team cooperates with government and private sectors to develop long-term water management projects that mitigate impacts of droughts and floods for the individuals from agriculture sector and PTT Group. One of the long-term projects is Network of Reservoir Project which consists of water reservoirs that are linked by pipelines provided by the government and private sectors. The Project reserves water for stakeholders in Chonburi and Rayong and secures the water for community's basic need within the area. PTT initiated the project since mid-2014 and encouraged relevant government and private sectors to get involved in the water distribution policy through War Room Committee in the Eastern Region.

PTT applies 3Rs (reduce, reuse, recycle) approach to our water management. In 2014, we were able to reduce fresh water consumption in areas of PTT's and PTT Group's operations with high water related risks and implementation by reducing and recycling 0.17 million cubic meters.

### Total water consumption per product

(cubic meters per ton production)



Total water consumption continued to reduce as a result of water consumption reduction awareness programs and improved process efficiency initiatives such as boiler system, cooling tower system, etc.

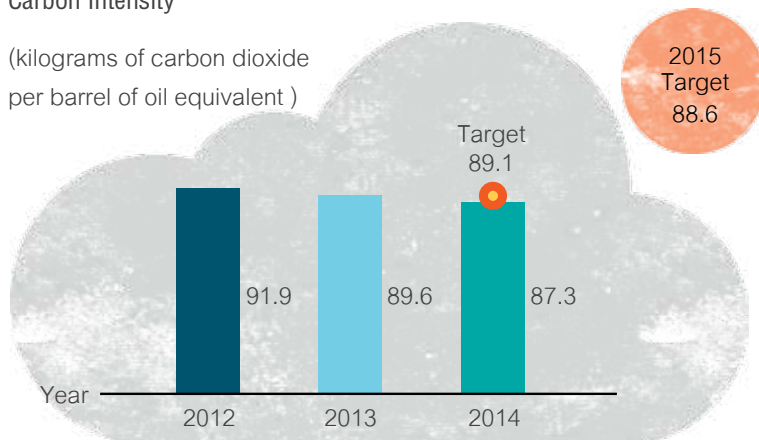


## Climate Change and Energy Management

PTT has developed Green Roadmap which is a long-term plan for PTT to become a low carbon and environmental friendly organization. We have set targets to reduce GHG emissions from PTT Group's activities to 1.1 million tons of carbon dioxide equivalent and reduce carbon intensity by 5 percent by 2020 compared to the 2012 baseline. In 2014, PTT Group reduced GHG emissions by 100,000 tons of carbon dioxide equivalent and revised PTT Energy Efficiency Master Plan. The target is set to reduce energy consumption at the average rate of 1.9 percent per year based on business as usual to mitigate impacts from GHG emissions.

### Carbon Intensity

(kilograms of carbon dioxide  
per barrel of oil equivalent )

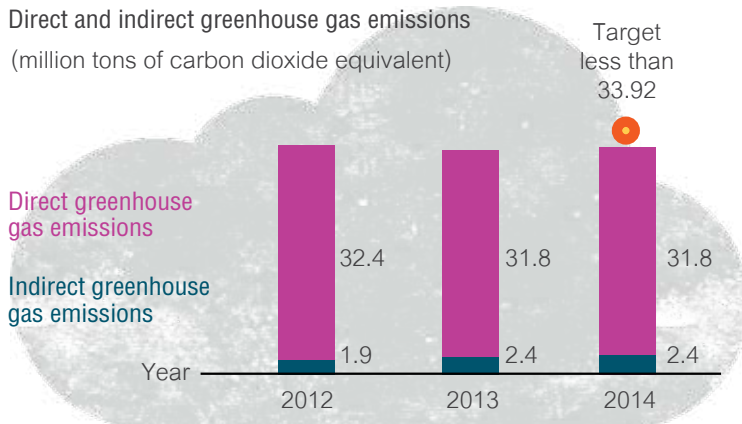


Remarks:

- In 2014, PTT revised target setting method from BAU to actual carbon intensity.
- Scope covers PTT operational control assets and is in accordance with PTT Group SSHE Governance Policy.

### Direct and indirect greenhouse gas emissions

(million tons of carbon dioxide equivalent)



GHG emissions exceeded target. Due to the sudden drop in oil price, PTT needs to reconsider the type of fuel used in the production process in order to maintain economic and environmental balance.

Remarks:

- Scope covers PTT operational control assets and is in accordance with PTT Group SSHE Governance Policy.
- Target for direct and indirect GHG emissions.

### Energy Efficiency Improvement Project at Rayong Gas Separation Plant

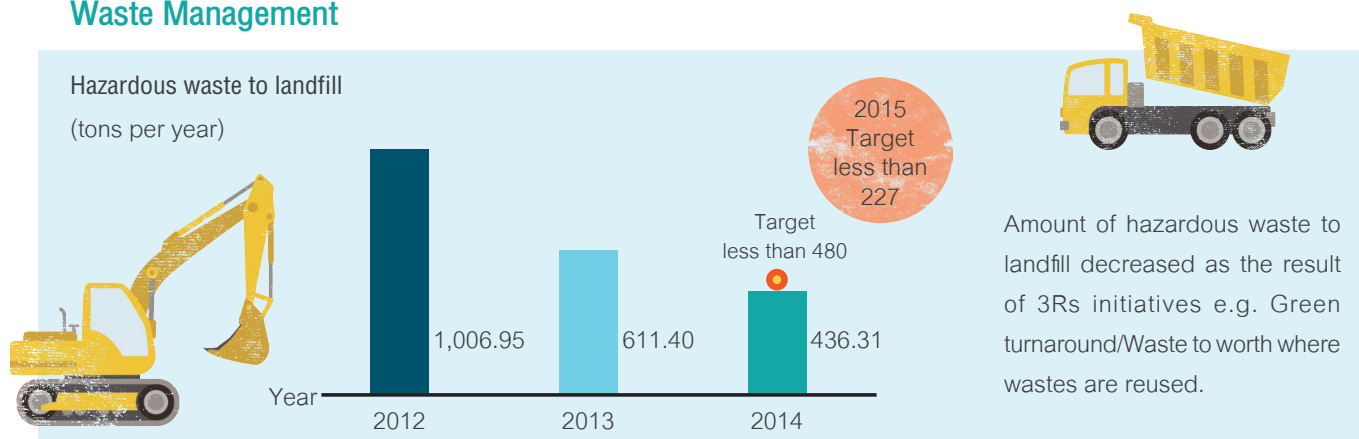
PTT has invested over 1,500 million baht in the Waste Heat Recovery System at the Onshore Compressor Station Unit 3 to recover waste heat for use in the hot oil system where it is directed to Gas Separation Unit 5 and Gas Pipeline Processing Plant in order to improve energy efficiency in the production process. The project's total energy saving is estimated at 520,800 megawatt-hours per year or the equivalence of GHG emissions reduction of 98,000 tons of carbon dioxide per year. This is translated into cost saving from reduced fuel consumption of 500 million baht per year. PTT plans to extend the project by connecting the hot oil system with Gas Separation Unit 6 where we plan to expand the production capacity from 800 million cubic feet per day to 880 million cubic feet per day. The project will be fully implemented by the second quarter of 2015 with the expected fuel consumption reduction of 184,800 megawatt-hours per year or the cost saving of 150 million baht. The investment budget for the project at Gas Separation Unit 6 is 80 million baht.



## Oil and Chemicals Spill

PTT holds regular emergency drills both internally and in cooperation with external agencies in order to efficiently manage emergency situations. For instance, the spill of Jet A-1 oil at Chiangmai's aviation fuelling station which resulted in 26,000 liters of oil spilled into public waterway. We took immediate actions to mitigate environmental and social risks including immediately ceasing oil delivery to prevent further spill and establishing Emergency Management Center chaired by the Senior Executive Vice President of Oil Business Unit. The Center monitored, oversaw and supported the coordination with local organizations and authorities until the situation was back to normal. The area of exposure was controlled and limited and the oil-contaminated waste was disposed by the waste disposal system in accordance with relevant standards and regulations. In addition, the water quality was monitored continuously for certainty until the quality was restored to its normal condition.

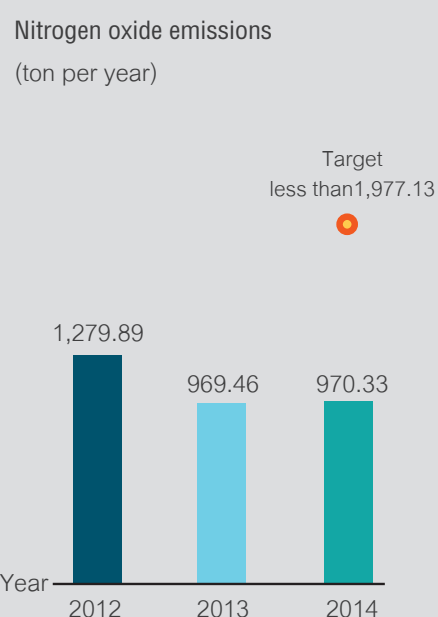
## Waste Management



## VOCs, NOx, and SOx Emissions

VOCs emissions	2012	2013	2014	Target 2014	Target 2015
<b>LPG Terminal</b> (tons of VOCs emission per million liter of production)	0.280	0.262	0.276	VOCs emissions per production not to exceed 2012 level	0.280
<b>Oil Terminal</b> (tons of VOCs emission per million liter of production)	0.346	0.283	0.257		0.346
<b>Gas Separation Plant</b> (kilograms of VOCs per ton of product)	0.173	0.163	0.172		0.173

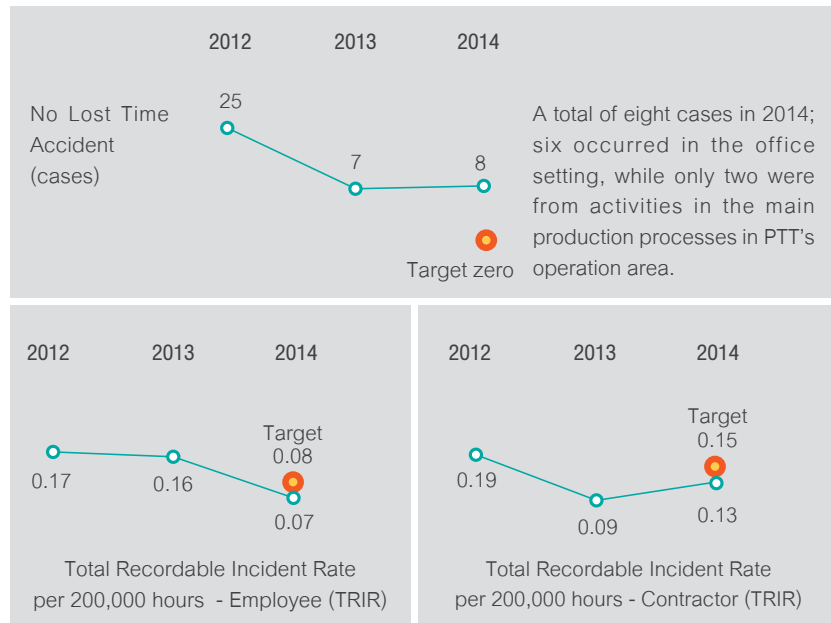
VOCs emissions from LPG Terminal increased from 2013 as PTT extends the scope of reporting and revised data collection method to be more accurate. VOCs emissions from Gas Separation Plant increased from 2013 due to increased fuel used and flaring.



PTT's operations are in compliance with environmental laws and regulations where compliance assessment is conducted annually at every operation. In 2014, PTT received no fines or sanctions for non-compliance with environmental laws and regulations.

## Safety

PTT's safety management extends to both personal safety and process safety with the objective to achieve zero accident target. To gain the stakeholders' confidence, PTT supports employee and contractor engagement in safety issues to cultivate a safety culture throughout the organization under the Security, Safety, Health and Environment Management System (SSHE MS). Therefore, strategic and annual targets have been set to consistently manage and monitor performance for all operations under PTT Group.





## Transportation Accidents

In 2014, most accidents occurred were land transport accidents which resulted in two fatalities. After the investigation and evaluation, drivers' behaviours were identified as the cause of the accidents. PTT has, therefore, published the PTT Group Road Safety Management Guideline which comprises governance, SHE management, driver management, route management and vehicles & parts management. The guideline is also applied to the procurement contracts for Natural Gas and Oil Business Units. We also conducted training on PTT Group Road Safety Management Guideline for 66 external transport companies. Other projects aimed at cultivating safe behaviours include PTT Zero Accident Fleet Project and random safety inspection of six fleet operators to ensure the application of safety standards devised. Moreover, PTT has started utilizing the In Vehicle Monitoring System in transport vehicles under the Oil Business Unit for 2015, in which over 1,300 vehicles are now implementing the system. The system helps to record driving data which will be used to improve the behaviour for greater road safety.

### Accidents from Corporate Vehicles



	PTT Target 2014	PTT Performance 2013      2014		
	0.10	0.12	0.11	<p>The number of land transport accident in 2014 was higher than the target. It is, however, lower than that of 2013 and the decreasing trend is likely to continue. For transport of natural products, there were no accidents that have resulted in lost time incident for all parties involved in the accidents.</p>
The number of land transport accidents per 1,000,000 km				
	less than 12	19	8	<p>The number of accidents from using the corporate vehicles is lower than the target. It has dropped by more than 50 percent when compared to the previous year. There were no injuries for all parties involved in the accidents.</p>
The number of accidents from using the corporate vehicles				

The number of accidents from using the corporate vehicles is lower than the target. It has dropped by more than 50 percent when compared to the previous year. There were no injuries for all parties involved in the accidents.

## Occupational Health Risk Prevention

PTT manages occupational health & safety risks of all employees and operators by conducting a work-related health risk assessment in order to prioritize and devise control measure, lowering the risks. All operators are to receive intensive training before performing their assigned tasks. As for the operators who work with hazardous chemicals, PTT has set fixed operating duration and requires the use of appropriate personal protective equipment at all times. For examples, there has been health monitoring for operators who worked on the oil spill

clean-up after the Jet A-1 leakage incident at an aircraft refueling station in Chiang Mai. This is to ensure that all operators do not receive any health impacts from contact with oil vapors from the leakage. From the health assessment, there were no cases of abnormalities from the operation.

## Process Safety

At all operation areas, PTT manages the process safety in accordance with PTT Group SSHE Management Standards and Operational Excellence Management System to prevent accidents in the production processes. Furthermore, the Process Safety Management Taskforce has been set up to drive safety management in PTT Group's production processes, in order to achieve zero Tier 1 Process Safety Events (PSE) as well as to exchange information within the organization, thereby preventing similar incident in the future.



### Process Safety Improvements from the Gas Separation Plant Unit 5 Incident

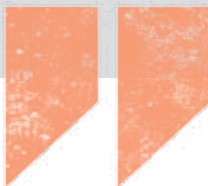


**Charcrie Buranakanonda**  
Senior Executive Vice President, Gas Business Unit

In August 2013, the Waste Heat Recovery Unit (WHRU) of Gas Separation Plant Unit 5 was damaged from lightning incident and caused operations to shut down. By October 2013, PTT was able to start production back up to 50 percent capacity. A Temporary Fire Heater Exchanger was installed in April 2014 which enabled the GSP Unit 5 to operate at 100 percent capacity.

From the incident, we have reviewed, analyzed and conducted the Hazard and Operability Study (HAZOP) in order to find the root cause and develop a solution to prevent reoccurrence. All risks were accessed and used as inputs to modify engineering design that takes into account undesirable events in accordance with safety standard. Twelve months later in September 2014, a new WHRU was installed and operation resumed at full capacity.

In addition, we have documented the lessons learned from this incident in PTT Knowledge Management System and organized Knowledge Sharing events within the PTT Group including PTTGC, TOP, IRPC, GPSC, PTTLNG, and PPCL so that the lessons learned from this incident can be accessed by anyone within PTT Group and be used to improve process safety in the future.

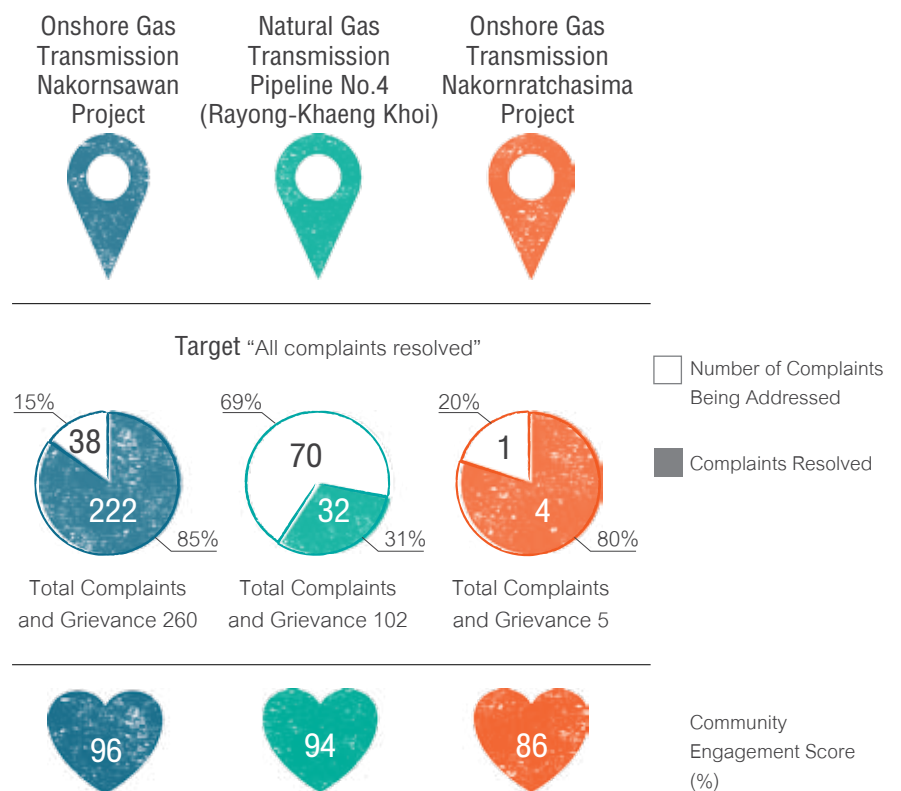
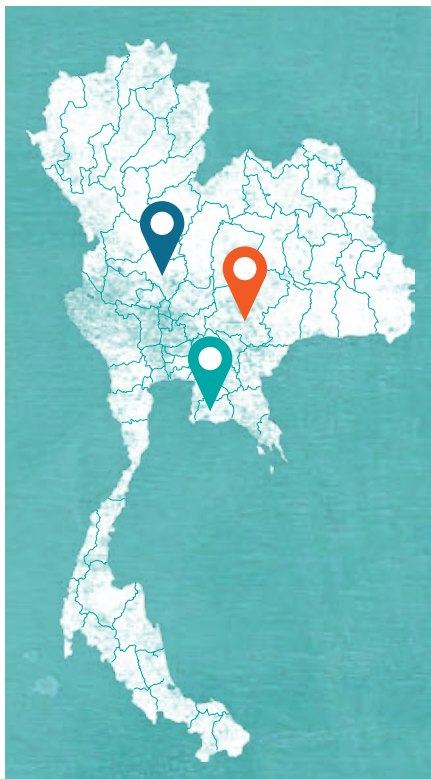




## Capital Project Management

Sustainable co-existence with the environment and communities is the ultimate goal for PTT. Thus, we give the utmost care to address the possible community and environmental impacts from our construction projects by mandating that Environmental Impact Assessment (EIA) and grievance process are conducted and established for all our projects as well as build good relationships with surrounding communities through stakeholder engagements.

For the Natural Gas Transmission Pipeline Projects, we have in place a stakeholder engagement process to inform and listen to concerns of local residents, local government organizations, and relevant private sector. In 2014, there were three major capital projects: Onshore Gas Transmission Nakornsawan Project, Natural Gas Transmission Pipeline No.4 (Rayong-Khaeng Khoi), and Onshore Gas Transmission Nakornratchasima Project. Complaints and grievances from these capital construction projects include damages to homes, dust pollution, traffic inconvenience, noise disturbance and loss of business opportunities. Most complaints and grievances were received via telephone and the tripartite committee comprising of PTT, representatives of relevant stakeholders and representatives of government sector. For all major capital projects, we are committed to addressing all complaints and grievance. In addition, we have set a target to achieve at least 60 percent of acknowledgement and project acceptance from the respondents surveyed during the EIA study. In 2014, the acknowledgement and project acceptance are 76.08 percent and 73.51 percent, respectively.

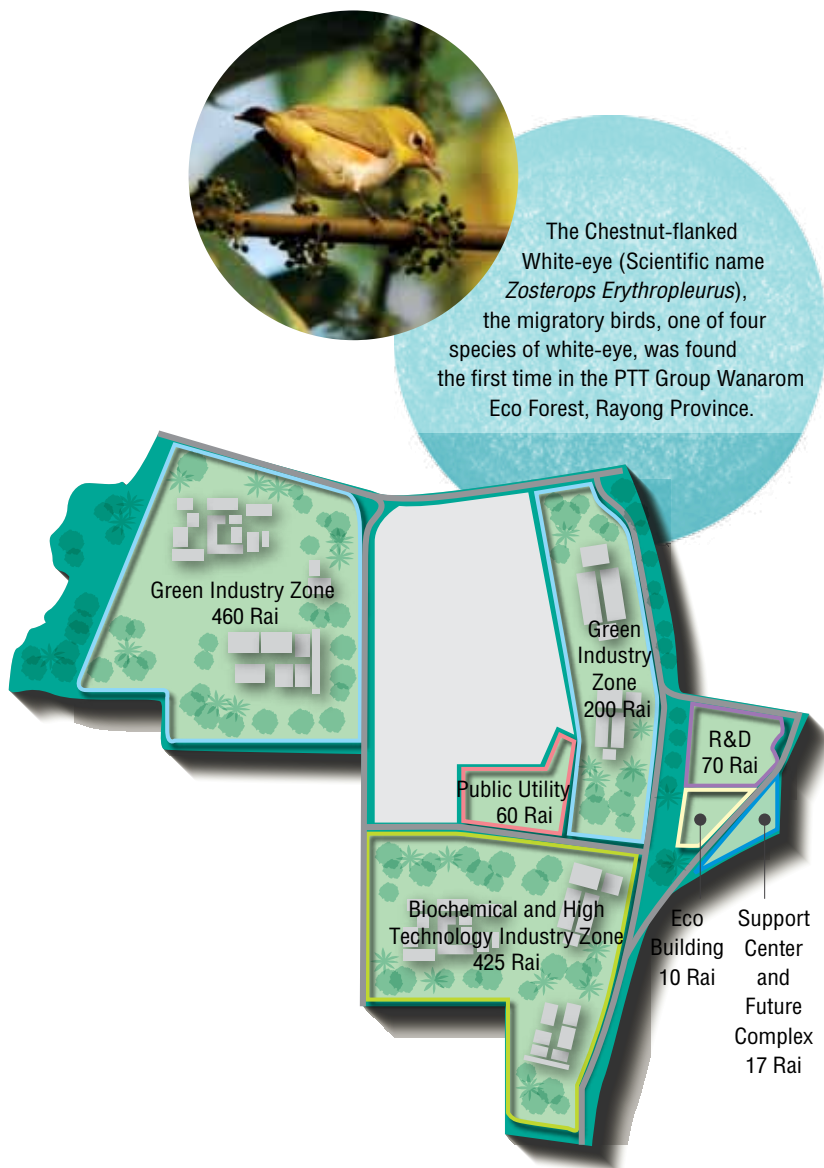


PTT's operations, particularly our natural gas pipelines, are located on large tracts of land that provide habitat for a diverse range of plant and animal species. We recognize our responsibility to minimize the impact of our operations on these habitats. Consequently, we have conducted the biodiversity risk assessment for all PTT Group operations in Thailand. The assessment has identified Khanom Gas Separation Plant as having potentially high risk on biodiversity values; in 2014 we completed a Biodiversity Action Plan (BAP) for that operation. The initial assessment has identified PTTEP S1 Project in Sukhothai, Phitsanulok, and Khampangphet Province as having potential high impacts to biodiversity. However, we have reviewed the risk assessment in 2014 and found that impacts to biodiversity for these projects are low due to the fact that the surrounding National Forest areas have been converted to agricultural lands.

To raise stakeholders' trust and acceptance in PTT's management of biodiversity and ecosystem services, we have publically communicated and publicized our biodiversity process and management at the international level. PTT presented the performance of our biodiversity policy and biodiversity-related corporate citizenship projects of PTT Group under the topic "How Businesses Implement the Aichi Biodiversity Targets: Green Farm, Green Development?" at the Twelfth Meeting of the Conference of the Parties to the Convention on Biological Diversity during 6-17 October, 2014 in Pyeongchang, South Korea.

## PTT WEcoZI Eco-Industrial Zone Development

PTT has developed the Eco-Industry Project in the Asia Industrial Estate since 2012 under the name PTT Wanarom Eco Zone Industries or PTT WEcoZI. The Project is a prototype of sustainable business that is environmentally friendly. The Project also aims to create engagement and business opportunities to the surrounding communities so that community, industry, and the environment can sustainably co-exist under the Eco-Industry concept. The PTT WEcoZI includes:



- Environmentally focused industrial spaces including high-tech bio-industry and petrochemical industry.
- Basic infrastructure that optimize resource sharing and operating cost saving such as industrial water plant that uses membrane system, Eco PTT Central Utilities, Solar Cell Lightning System.
- LEED certified green office space. The building is opened for the PTT Group's companies and companies in that area to use as the co-working space, enabling the optimization of resources and invested capital.
- PTT Group Rayong Wanarom Eco Forest is a natural protection strip in eco-forest form which similar to the natural forest that has biodiversity of plant, wild animal and insect. PTT established the PTT Group Wanarom Eco Forest Learning Center in 2013 so that it can be used as a natural classroom which is opened to the interested public to come and learn about eco-forest and biodiversity.

PTT Group is committed to making industry, community and environment sustainably co-exist. The technologies employed in the PTT WEcoZI coupled with eco-industry concept will raise the standard of Eco Zone Industries so that all parties in the areas can benefit from industrial developments.

# KNOWLEDGE ORGANIZATION

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## Increasing Competitiveness by Promoting Innovation and Technological Development

### Nuttachat Charuchinda

Chief Operation Officer,  
Upstream Petroleum and  
Gas Business Group



PTT aims to become more self-reliant in developing innovative and environmentally friendly technologies in order to enhance its business competitiveness based on institutional knowledge. To that end, we are investing in developing our capabilities in two complimentary areas.

First, the PTT Research and Technology Institute (RTI), which for over 30 years, has played a significant role in innovation and technological development for PTT. The RTI has generated increased innovation outputs and revenues, and managed the optimal use of shared technological resources within PTT Group. The PTT Innovation to Commercial Gate: PTT I2C Gate was further developed to prioritize research projects and establish connections with business objectives for both technical and investment efficiency. Beginning with the Idea stage, to Scoping, R&D, Pilot, and finally Commercialization, the PTT I2C Gate prevents the loss of valuable resources into research projects that have low probability for success, and leads successful research towards commercialization.

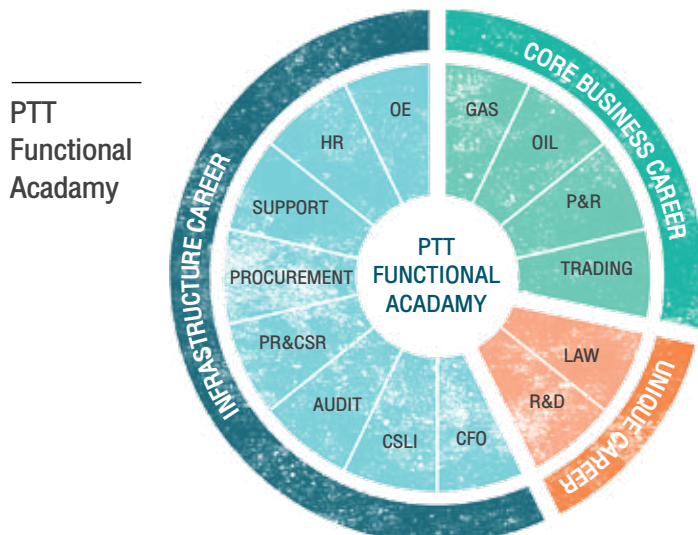
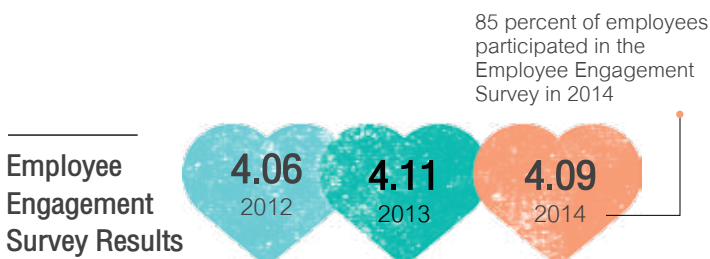
Second, our employees are among whom we wish to instill a sense of courage for innovation and creativity. Indeed, innovation comprises one of PTT's SPIRIT Values. Our mechanisms to support innovation range from management through the Innovation Committee, to organizing an Innovation Development and Screening Process, integrating these issues into employee training curriculums, all the way to sharing knowledge and experiences, and innovation showcases and exhibitions. Given this, employees throughout the organization have the opportunity to contribute to all aspects of innovation development. They are encouraged to present their ideas from concepts to real-life application. Outstanding concepts could connect to potential considerations for future investments in research in the RTI.

For more than two years since PTT has seriously committed to stimulating innovation within the company, our employees have submitted an extensive and impressive range of ideas. Innovations do not only originate from the PTT Research and Technology Institute, but from other divisions as well. Some examples include Café Amazon Drive Awake Application, which serves as a warning system for drivers to prevent sleeping while driving, and a method to grow cold-climate flowers by using carbon dioxide. Many innovations have even received external recognition, both in Thailand and overseas. Overall, this leads us to believe that PTT will be able to use the foundation of Knowledge Organization to drive sustainable innovation and technologies and can continuously bring value to society and the environment.

## High Performance Organization

Our success depends upon our ability to attract and retain talented and skilled employees. We are constantly working to find new ways to develop and manage our most important resource – our employees – so that they and our business will thrive. PTT Group's values, "SPIRIT", is therefore paramount to our continued success; as such we conduct annual SPIRIT Commitment surveys for all of our employees, design activities to enhance these values throughout the organization, and aim to foster a "SPIRIT" work culture. We believe that these efforts have helped to create a rewarding and collaborative workplace, resulting in a low employee turnover rate of 3.01 percent.

We measure our progress towards becoming a great workplace through the annual employee engagement survey. In 2014, the employee engagement score was at 4.09 percent, lower than the previous year owing to issues related to employee growth opportunities. We are, therefore, committed to focusing on these areas to improve our overall engagement by organizing a "Success Profile" that specifies the qualifications of every position along a career path. This will not only provide a good foundation for our employees, but also pave a way for them to move forward in developing their skills, advancing their careers, and fundamentally improving our company's human resources to better serve the diverse needs of our employees.



### SPIRIT Commitment Score

SPIRIT  
Commitment  
Score

80

Score

66 2014

58 2013

46 2012

**S** SYNERGY

**P** PERFORMANCE  
EXCELLENCE

**I** INNOVATION

**R** RESPONSIBILITY  
FOR SOCIETY

**I** INTEGRITY  
AND ETHICS

**T** TRUST  
AND RESPECT

Employees at all levels receive annual performance assessments to monitor their progress towards their individual targets. Feedbacks from these assessments are used as inputs in developing employee capabilities. PTT has in place Individual Development Plan (IDP) and Career Management processes as well as training programs to support employee learning and skill development. In 2014, PTT invested 55,435 baht per person in employee training. On average, an employee received 34.68 hours of training per person.

To support the Employee Development Strategy, PTT has also established the PTT Functional Framework 14 Academy, along with the PLLI Course Catalog, to develop non-managerial employee qualifications – emphasizing capability readiness and technical expertise along the 14 career paths.

## Course: Financial Analysis for Retail Network Expansion and Optimization

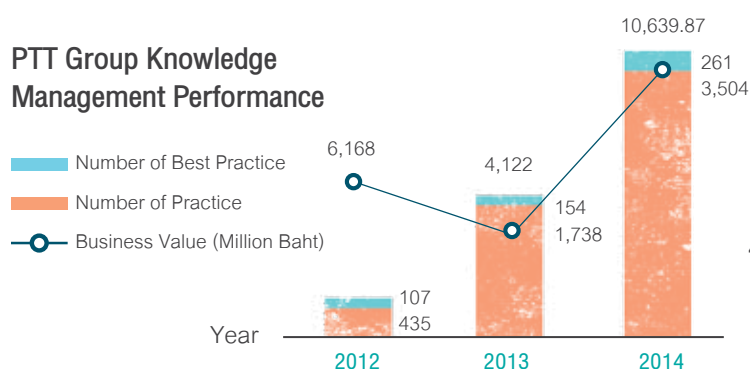
PTT has developed a course to analyse the financial returns of retail network expansion and optimization, which directly meets the needs and scope of the business. The Course provides business advice to sales representatives related to retail expansion; selecting businesses to be included in service stations based on investment returns; and establishing strategies in selecting business investors. A total of 88 employees, or 34 percent of employees and mid-level managers in the Retail Division, participated in the training course. Those who received training were afterwards able to apply their knowledge back into their roles, which in the future would build a foundation for knowledge sharing among employees to generate high working standards. Business-related achievements from this course are reflected in the increase in retail sales volume from 7,968 million liters in 2013 to 8,307 million liters in 2014 – a 4 percent increase.

In terms of succession, PTT's management procedures and leadership pool ensures that the company will have capable employees ready to take the reins on a position and continue to grow within the organization. The succession plan is prepared by considering the demand-supply ratio within a 5-year period, and setting a 1:1 target. In 2014, the demand-supply ratio for managers was at 1:2.

PTT underwent organizational restructuring in 2014 and established an Infrastructure Business Group to meet business demand. This consequently led to an increase in the number of new career paths to support the types of work under the new business. A new Chief Operating Officer was selected under the PTT Group Leadership Development Program – a mechanism within PTT's management and managerial development procedures that has continuously been used in selecting executives. The Program allowed for the restructuring to proceed with ease, and aided the communication of internal restructuring such that no employees were dismissed in the process.

Furthermore, PTT acknowledges and supports the activities of the State Enterprise Employees Union of PTT Public Company Limited. The number of employees who are members of union increased to 2,764 people in 2014, or 64.03 percent of the total number of employees.

### PTT Group Knowledge Management Performance



### Performance Management

"In 2014, the Performance Management System (PMS) was improved to facilitate data entry, which meant that employees could better understand and visualize the relationships between the tasks that they received and the tasks of their line managers. This painted a larger overall picture of how employees helped to drive the business, and eased communications between line managers and employees by enabling them to compare whether their work progress met established targets. If not, what could be done to meet them."

Witchulada Petnumkiao  
Analyst



### Knowledge Management

PTT promotes the PTT Group Knowledge Management System for employees to exchange knowledge on Best Practices and Lessons Learned, and to increase knowledge resources and develop expertise within the PTT Group. In 2014, knowledge resources increased by 99 percent from 2013 – higher than the 10 percent target. Organizing knowledge in a systematic way increases business value by bringing existing knowledge resources within the Group towards financial and other forms of values.

Year 2014  
490 experts



Year 2014  
1277 experts



## PTT Research and Technology Institute, Vidyasirimedhi Institute and Kamnoetvidya Science Academy

As the nation's youth and human capital development is considered key to business competitiveness, PTT is dedicated to supporting education and research for new innovation such as developing environmentally-friendly products, refining production processes, reducing costs of production and alleviating the environmental impacts. In order to face the challenges and find new business opportunities, PTT recognizes the importance of building the technological foundation together with developing the employees' capabilities. PTT, thus, places great emphasis on science and technology by establishing an educational institute. This is to drive business sustainability as well as to create a shared value with the society in stimulating frontier innovations in the private, industrial and social sectors in addition to uplifting education in Thailand with respect to international standards.

### PTT Research and Technology Institute

PTT has established the first national-level research and development center with specialized capabilities in petroleum and petrochemicals. The center benefits from academic excellence of PTT's management, researchers and employees in order to drive environmentally-friendly innovation and conduct research supporting PTT Group to become a leader in all aspects of operations.

From the consistent development of technology and innovation, PTT recognizes the importance of human capital development in the country with regards to science and technology related knowledge. PTT Group has been most honored as the Princess Maha Chakri Sirindhorn has granted royal names, 'Vidyasirimedhi' to Rayong Advanced Institute of Science and Technology and 'Kamnoetwit' to Rayong Science Academy. Vidyasirimedhi Institute means an institute of the knowledgeable scholar in science, while Kamnoetwit School means a school of knowledge origin and science personnel.

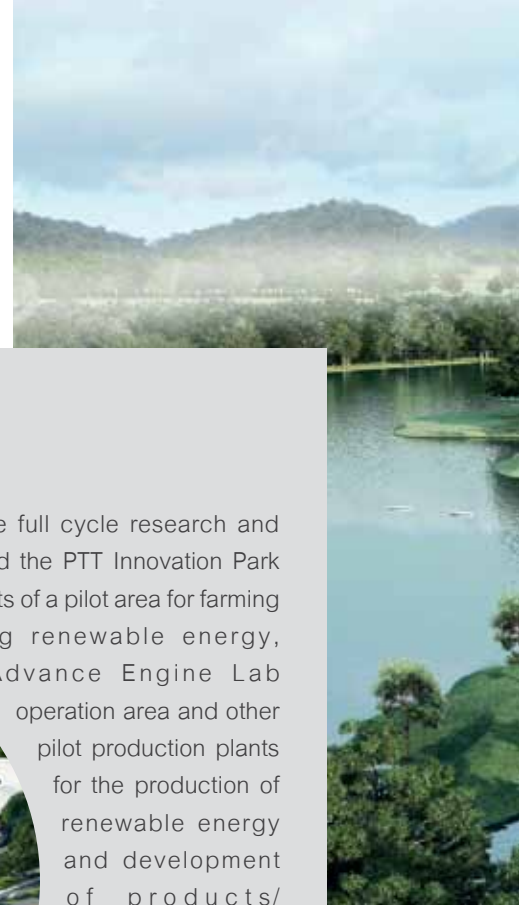
### PTT Innovation Park

With the commitment to form the full cycle research and development, PTT has established the PTT Innovation Park which consists of a pilot area for farming using renewable energy, Advance Engine Lab operation area and other pilot production plants for the production of renewable energy and development of products/technology that are commercially feasible and environmentally-friendly.



### PTT Diesel CNG

PTT Research and Technology Institute further expands fuel-saving innovation by developing PTT Diesel CNG equipment that is able to use natural gas together with diesel, increasing complete combustion rate while reducing diesel consumption by 60 percent as compared to conventional engines. This helps to reduce combustion soot and emission of carbon dioxide, and has led to over 4 million baht of revenue for PTT from sales of the technology patents. The revenue is further expected to increase to 50 million baht from 2015 to 2018. PTT Diesel CNG is indeed PTT's first successful step in developing the organization towards excellence in knowledge management and innovation.





## Vidyasirimedhi Institute

Vidyasirimedhi Institute is a tertiary institute with an emphasis on knowledge development combining theoretical research with applications for industrial demands. This is to enhance the competitiveness and elevate science and technology knowledge in the country, which will also allow PTT to build on the knowledge base and research work of the institute, answering the industry's challenge in knowledge management.



## Kamnoetwit School

Kamnoetwit School is an upper secondary school, which focuses on cultivating and strengthening potentials for students with talents in mathematics and science, preparing them for tertiary education. The school offers scholarship for talented students in order to support development of researchers and scientists who have the potential to contribute to national development in the future.



## CORPORATE CITIZENSHIP

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## Corporate Citizenship

His Majesty the King's Sufficiency Economy Philosophy has guided our social and community development initiatives toward sustainable development. PTT has contributed 1,830 million baht to corporate citizenship activities through initiatives that we lead as well as through collaborations with networks and various foundations. PTT's social and community investment strategy focuses on three main areas: environmental conservation, educational support, and community development. PTT's key contributions in 2014 are summarized below.

### Natural Resources and the Environmental Conservation

"Restoring, conserving, and protecting natural resources and the environment as well as creating and strengthening network of communities to promote environmental conservation"

On an auspicious occasion, January 9, 2014, His Majesty King Bhumibol made his royal private visit to the Sirinart Rajini Ecosystem Learning Center in Paknampran, Pran District, Prachuap Khiri Khan Province to monitor the progress of the center. It was his first visit since 2002 when PTT offered one-million Rai project in Honor of H.M. the King on the occasion of his 50<sup>th</sup> Anniversary of the Accession to the Throne. This area was successfully restored from abandoned shrimp farms into healthy mangrove with alliance between PTT and our network.

Today, this mangrove serves as the learning center for ecosystem, marine nursery habitat, as well as food source for the interdependence of humans, animals and the forest. H.M. the King observed the fruitfulness of the forest trail, a distance of 600 meters, and delivered a royal advice for all parties to work together to preserve the forest and cultivate the public awareness based on the concept of sustainable natural resource conservation, which everyone can share its value. This auspicious occasion brought the highest honour to the community of Paknampran and relevant persons to be granted a royal audience with H.M. the King

The sustainable management of forest resources has contributed the ecological balance and address the problem of climate change. The PTT Reforestation Institute has joined the network of reforestation volunteer ranger (known as Ror.Sor.Tor.Por) to monitor this reforestation project in honor of H.M. the King. For the occasion, the project was expanded from





T-VER reforested area at 185.24 Rai: 128.15 Rai of artificial natural forest, 43.05 Rai of four forest models, and 14.04 Rai of mixed forests.



The vetiver cultivation contest in the eighth consecutive year following the H.M. the King's royal initiative

the 50-year reign on 1 million Rai of original forest covering 48 provinces and a total new area of 15,072 Rai covering 11 provinces. This reforestation project was also registered as the first project in the Thailand Voluntary Emission Reduction Program (T-VER) for the forest sector. The project is located in Pa Yup Sub-district, Wang Chan District, Rayong Province. This reforestation project is estimated to absorb carbon at a minimum of 176 tons per year or equivalent to the forest cost at 1,800 million baht in the next 30 years.

To promote the conservation of soil and water, PTT has started the Vetiver Development and Campaign following the H.M. the King's royal initiative through the vetiver cultivation contest which has continued for eight consecutive years. This project has been expanded to knowledge building in various aspects including local product development and product design. Fifty-eight marketing courses were conducted for 2,780 participants within the community and our network to drive the production of high-quality products and strengthen existing network. The program has generated over 4,390,322 baht of income for participating households since its inception.

## Human Resources Development

“Improving all aspects of education by supporting basic infrastructure, educational materials, curriculum development, educator quality improvement, and youth skill development”



In addition to opening the Kamnoetvidya Science Academy and Vidyasirimedhi Institute in 2015, PTT continues supporting basic educational needs for children and youth in the local communities. In 2014, PTT contributed in the construction of a two-story, eight-classroom school building construction for the Ban Tha Muang School, Nakhon Si Thammarat Province, which marked the 25<sup>th</sup> building from PTT contribution. We opened the 33<sup>rd</sup> PTT Thai-Power-for-Thai library at Wat Rath Charoen Tham School, Ratchaburi Province. We granted 2,549 scholarships totaling approximately 10.7 million baht to students from elementary school to the higher education across the country. In addition, we hosted the second professional development for teacher event to the teachers of Hin Kong School (Pibun Anusorn), Nong Khae District, Saraburi Province.

To promote the understanding of petrochemical and refinery knowledge from young age, PTT has for ninth consecutive year, organized “Petro Camp to Petro Champ” youth. This year, 91 students from 13 schools around Thailand attended the program. Moreover, PTT together with King Mongkut's University of Technology Thonburi (KMUTT) select 8 students per year for scholarship support to study in Chemical Engineering and Environmental Engineering programs. To date, 32 students have received the scholarships, and 4 have graduated.

## Communities and Society Development

“Improving quality of life and strengthening communities sustainably”

PTT integrates our expertise in energy with community engagement to sustainable learning by collaborate with Ban Khanun Klee Community, Thong Pha Phum District, Kanchanaburi Province which is a pioneering community to implement energy self-reliance. The initiative contributed to electricity generation and water production for community by installing of a weir to generate electricity. The system can generate 1,500 watts of electricity and help to reduce GHG emissions of 11,000 kilograms carbon dioxide equivalent per year. As a result,





more than 22 households and the local school now have access to electricity and clean water from the weir.

Energy for Community Project in collaboration with communities established 60 pilot renewable energy plants in 24 sub-districts, 18 provinces. The technology adopted in each area corresponded to the availability of local resources such as construction and installation of biogas production and transportation system from swine farm totaling 120 households to replace LPG use in Tha Manao Sub-district, Chai Badan District, Lopburi Province.

Moreover, PTT has implemented local waste management, in collaboration with the Division of Public Health and Environment of Mab Kha Municipal Office, Rayong Province. The initiative included training and site visit to the Zero Waste Management Learning Centers at Sra Song Hong Community and Chan Wechakit Community in Pisanulok Province. The event had over 100 participation of staff from Village Health Volunteer (VHV) and Mab Kha Municipal with the aim of becoming the local trainer for communities. Furthermore, PTT supported medical instrument for Mab Tha Put Hospital in order to increase its capacity to service locals through a budget of 10 million baht per year (2014-2018).

PTT also contributes via PTT established foundations such as Rayong Institute of Science & Technology Foundation to support the operation of Vidyasirimedhi Institute, RASA foundation to support the operation of Kamnoetvidya Science Academy, and Sustainable Energy Foundation to support natural resource, environment and energy conservation including educational opportunities for students via Green Globe Institute, Learning Institute For Everyone, Teacher-honored Project and research studies, etc.

### Volunteer



# PTT PERFORMANCE SUMMARY



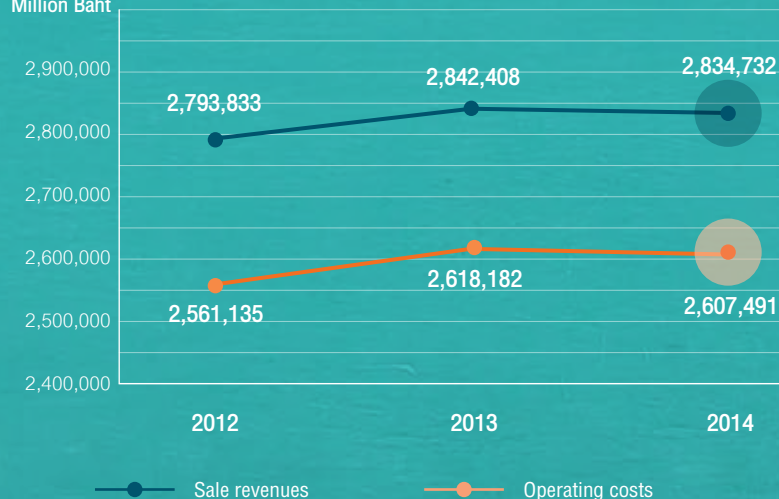
## ECONOMICS

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
<b>Economics</b>					
EC1	Sale revenues	Million Baht	2,793,833	2,842,408 <sup>[1]</sup>	2,834,732
	Operating costs	Million Baht	2,561,135	2,618,182 <sup>[1]</sup>	2,607,491
	Employee wages and benefits <sup>[2]</sup>	Million Baht	7,615	8,086	8,785
	Dividend payments for the performance of the year	Million Baht	37,123	37,116 <sup>[1]</sup>	39,985
	Payments to government	Million Baht	3,516 <sup>[3]</sup>	815 <sup>[1][4]</sup>	3,572 <sup>[4]</sup>
EC4	Tax privileges from the Board of Investment, Thailand	Million Baht	7,384	5,492	6,315

### Remarks:

- [1] Revised number
- [2] Employee wage and benefit for employees managed under PTT include PTT's employees, PTT's secondment and employees in subsidiaries under PTT financial management. The scope does not include chief executive officers and top executives include salary, bonuses, contributions to the provident funds, etc. (if applicable).
- [3] Tax base changed from 30 percent to 23 percent.
- [4] Tax base changed from 23 percent to 20 percent.

Million Baht







# PEOPLE

GRI	Required Data	Unit	2012		2013		2014	
			Male	Female	Male	Female	Male	Female
G4-10	Permanent employees	Manpower	2,851	1,376	2,953	1,441	3,009	1,507
	Outsource workers <sup>[1]</sup>	Manpower		1,932		1,945		2,029
	Workforce <sup>[2]</sup>	Manpower		6,159		6,339		6,545
	Employees by area							
	• Bangkok <sup>[3]</sup>	Manpower	1,540	1,210	1,550	1,264	1,593	1,313
	• Others <sup>[4]</sup>	Manpower	1,293	159	1,359	164	1,370	181
	• Overseas <sup>[5]</sup>	Manpower	18	7	44	13	46	13
G4-LA12	Employees by age							
	• Over 50 years old	Manpower	717	343	651	317	677	341
	• 30 - 50 years old	Manpower	1,440	729	1,591	810	1,665	837
	• Below 30 years old	Manpower	694	304	711	314	667	329
	Employees by level							
	• Executive (Level 13 - 18)	Manpower	136	46	146	56	141	58
	• Middle management (Level 10 - 12)	Manpower	319	213	334	220	342	240
	• Senior (Level 8 - 9)	Manpower	738	464	761	475	812	470
	• Employee (Level 7 and below)	Manpower	1,658	653	1,712	690	1,714	739
G4-LA1	Total new employees	Manpower		357		317		270
	New employees	Manpower	217	140	196	121	154	116
	New hire rate	%	7.61	10.17	6.64	8.40	5.12	7.70
	New employees by area							
	• Bangkok	Manpower	106	116	120	110	114	95
		%	3.72	8.43	4.06	7.63	3.79	6.30
	• Others <sup>[4]</sup>	Manpower	111	24	76	11	40	21
		%	3.89	1.74	2.57	0.76	1.33	1.39
	New employee by age							
	• Over 50 years old	Manpower	0	0	2	0	2	0
		%	0.00	0.00	0.07	0.00	0.07	0.00
	• 30 - 50 years old	Manpower	15	16	29	18	22	19
		%	0.53	1.16	0.98	1.25	0.01	0.01
	• Below 30 years old	Manpower	202	124	165	103	130	97
		%	7.09	9.01	5.59	7.15	4.32	6.44
	Total employee turnover <sup>[6]</sup>	Manpower		172		156		136
	Employee turnover <sup>[6]</sup>	Manpower	109	63	93	63	89	47
	Employee turnover rate	%	3.82	4.58	3.15	4.37	2.96	3.12
	Employee turnover by area							
	• Bangkok	Manpower	76	58	62	59	67	47
		%	2.67	4.22	2.10	4.09	2.23	3.12
	• Others <sup>[4]</sup>	Manpower	33	5	32	4	25	1
		%	1.16	0.36	1.08	0.28	0.83	0.07

GRI	Required Data		Unit	2012		2013		2014	
				Male	Female	Male	Female	Male	Female
	Employee turnover by age								
	• Over 50 years old	Manpower	79	32	72	28	64	25	
		%	2.77	2.33	2.44	1.94	2.13	1.66	
	• 30 - 50 years old	Manpower	11	14	11	15	18	18	
		%	0.39	1.02	0.37	1.04	0.60	1.19	
	• Below 30 years old	Manpower	19	17	11	20	10	5	
		%	0.67	1.24	0.37	1.39	0.33	0.33	
G4-LA3	Number of employees entitled to parental leave <sup>[7]</sup>	Manpower	0	1,376	2,953	1,441	3,009	1,507	
	Number of employees taken parental leave <sup>[8]</sup>	Manpower	0	22	0	21	0	27	
	Number of employees returned to work after parental leave <sup>[9]</sup>	Manpower	0	22	0	21	0	21	
	Number of employees returned to work after parental leave who is still employed for the next 12 months <sup>[10]</sup>	Manpower	0	22	0	15	0	Not Available	
	Retention rate	%	0	100.00	0	71.43	0	Not Available	
G4-LA9	Average hours of training per employee <sup>[11]</sup>	Hour per employee	55.16	67.92	37.52	47.87	32.44	39.15	

## Remarks:

- [1] Outsource workers mean contractors who deliver tasks specified in the annual TOR and not include short-term outsource worker during the year e.g. sub-contractors, consultants, housekeepers, etc.
- [2] Workforce = Permanent employees + Outsource workers.
- [3] The data of number of employees by area in 2012 - 2013 has been adjusted after including oversea employees in 2014.
- [4] Others mean the provinces where PTT office is situated except Bangkok. The data of number of employees by area in 2012 - 2013 has been adjusted after including overseas employees in 2014.
- [5] Overseas employees include employees working abroad (Cambodia, China, Dubai, Laos, Myanmar, Malaysia, Philippines, Singapore).
- [6] Total employee turnover in 2013 has been adjusted.
- [7] Number of male employees entitled to parental leave in 2013 has been adjusted to include paternity leave benefits.
- [8] Number of employees taken parental leave in 2012 - 2013 has been adjusted.
- [9] Number of employees returned to work after parental leave in 2012 - 2013 has been adjusted to include personnel who took parental leave in the previous year and return in the next year. 2014 data includes personnel who took parental leave and return between 1 January 2014 and 31 December 2014.
- [10] Number of employees returned to work after parental leave who is still employed for the next 12 months in 2012-2013 has been adjusted to include personnel who has returned to work for 12 months in the previous year and return in the next year. 2013 and 2014 data cannot be calculated since personnel who took parental leave in 2013 and 2014 has not returned to work for 12 months.
- [11] Hours of training and further study are included in the average hours of training per year per employee.



# SAFETY

Reporting Scope			Year			PTT Operated Business												2014 Coverage (%)	
						PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation		NGV
						Head Office	Prakanong Office	Research & Technology Institute	Rayong Office			Gas Deposit	Oil Terminal	Aviation					
Near miss report	Total workforce and Independent contractor	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100			
	Total workforce and Independent contractor	2013	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Total workforce and Independent contractor	2012	•	•	•	•	•	•	•	•	•	•	•	•	•				
Occupational illness frequency rate (OIFR)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100			
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA					
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA					
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA					
Fatalities	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100			
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					
Absentee rate (AR)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100			
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Lost workday case (LWC)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100			
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•				
	Independent contractor		•	•	•	•	•	•	•	•	•	•	NR	•					

Reporting Scope			Year	PTT Operated Business												2014 Coverage (%)	
				PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation		NGV
				Head Office	Prakanong Office	Research & Technology Institute	Rayong Office			Gas Deposit	Oil Terminal	Aviation					
Lost day rate (LDR)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100	
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	NA		
Total recordable injuries case	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100	
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	NA		
Total recordable injuries rate (TRIR)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100	
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	NA		
Lost time injury frequency rate (LTIFR)	Total workforce	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100	
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2013	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	•		
	Total workforce	2012	•	•	•	•	•	•	•	•	•	•	•	•	•		
	Independent contractor		•	•	•	•	•	•	•	•	•	•	•	NR	NA		

Remarks:

NA: Not available

NR: Not relevant



GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
LA6	Lost workday case (LWC)				
	• Total workforce	Person	24	5	7
	Lost workday case(LWC)				
	• Independent contractor	Person	1	2	1
	Total recordable injuries case				
	• Total workforce	Person	24	13	17
	Total recordable injuries case				
	• Independent contractor	Person	2	4	7
	Total recordable injuries rate (TRIR)	Person per			
	• Total workforce	200,000 hours worked	0.21	0.11	0.13
	Total recordable injuries rate (TRIR)	Person per			
	• Independent contractor	200,000 hours worked	0.08	0.14	0.10
	Lost day rate (LDR)	Lost days per			
	• Total workforce	200,000 hours worked	3.98	0.79	0.46
	Lost day rate (LDR)	Lost days per			
	• Independent contractor	200,000 hours worked	0.79	1.23	0.45
	Absentee rate (AR)				
	• Total workforce	%	1.26	1.54	1.32
	Absentee rate (AR)				
	• Independent contractor	%	NA	NA	NA
	Lost time injury frequency rates (LTIFR)	Person per			
	• Total workforce	200,000 hours worked	0.16	0.07	0.05
	Lost time injury frequency rates (LTIFR)	Person per			
	• Independent contractor	200,000 hours worked	0.04	0.07	0.01
	Occupational illness frequency rate (OIFR)	Person per			
	• Total workforce	200,000 hours worked	0.40	0.01	0
	Occupational illness frequency rate (OIFR)	Person per			
	• Independent contractor	200,000 hours worked	NA	NA	NA
	Fatalities				
	• Total workforce	Person	0	3	0
	Fatalities				
	• Independent contractor	Person	0	0	0
	Near Misses				
	• Total workforce and Independent contractor	Case	418	134	154

## Remarks:

NA: Not available

- TRIR, TROIR, LDR, Absentee Rate are not broken down by provinces or Thailand's regional level because PTT's reporting boundary covers domestic operation only. OH & S data is not broken down by gender because PTT gives equal importance to the safety of all employees in accordance with PTT's code of business ethics.
- TRIC, TRIR, OIFR, LTIF data do not include first aid case.
- LWC data are tracked based on calendar day. Record begins the next day.
- Working hours of contractors at service stations include only stations in which PTT owns and operates. Reporting includes on PTT employees and supervised contractors only. Reporting excludes independent contractors.
- Working hours of NGV Service Station covers NGV Mother Station and PTT's own and operate only.
- PTT's OH & S reporting scope does not include the operation of contractors in project during the period prior to delivering the area back to PTT.
- In 2013, recording and reporting requirements for contractors' hours were expanded to increase the coverage.
- OH & S data excludes construction contractors for construction projects which have not been handed over to PTT such as transmission pipeline project and Vidyasirimedhi Institute and Kamnoetvidya Science Academy.
- Absentee Rate of Total Workforce includes PTT employees only.



# ENVIRONMENT

Reporting Scope		Year	PTT Operated Business													2014 Coverage (%)
			PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation	NGV	
			Head Office	Prakanong Office	Research & Technology Institute	Rayong Office			Gas Deposit	Oil Terminal	Aviation					
Direct GHG (Scope 1)	2014	•	•	•	NA	•	•	•	•	•	•	•	•	•	100	
	2013	•	•	•	NA	•	•	•	•	•	•	•	•	•		
	2012	•	•	•	NA	•	•	•	•	•	•	•	•	•		
Indirect GHG (Scope 2)	2014	•	•	•	NA	•	•	•	•	•	•	•	NR	•	100	
	2013	•	•	•	NA	•	•	•	•	•	•	•	NR	•		
	2012	•	•	•	NA	•	•	•	•	•	•	•	NR	•		
Direct energy consumption	2014	•	•	•	NA	•	•	•	•	•	•	•	•	•	100	
	2013	•	•	•	NA	•	•	•	•	•	•	•	•	•		
	2012	•	•	•	NA	•	•	•	•	•	•	•	•	•		
Direct energy consumption	2014	•	•	•	NA	•	•	•	•	•	•	•	NR	•	100	
	2013	•	•	•	NA	•	•	•	•	•	•	•	NR	•		
	2012	•	•	•	NA	•	•	•	•	•	•	•	NR	•		
Water withdrawal	2014	•	•	•	•	•	•	•	•	•	•	•	NR	•	100	
	2013	•	•	•	•	•	•	•	•	•	•	•	NR	•		
	2012	•	•	•	•	•	•	•	•	•	NA	•	NR	NA		
Effluent	2014	NR	NR	NR	NR	•	NR	•	•	•	•	•	NR	•	100	
	2013	NR	NR	NR	NR	•	NR	•	•	•	•	•	NR	•		
	2012	NR	NR	NR	NR	•	NR	•	•	•	NA	•	NR	NA		
Produced water	2014	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2013	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
	2012	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Waste Disposal	2014	•	•	•	•	•	•	•	•	•	•	•	NR	•	100	
	2013	•	•	•	•	•	•	•	•	•	•	•	NR	NA		
	2012	•	•	•	•	•	•	•	•	•	NA	NA	NR	NA		

Reporting Scope	Year	PTT Operated Business													2014 Coverage (%)
		PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation	NGV	
		Head Office	Prakanong Office	Research & Technology Institute	Rayong Office			Gas Deposit	Oil Terminal	Aviation					
Oil and Chemical spills	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2013	•	•	•	•	•	•	•	•	•	•	•	•	•	
	2012	•	•	•	•	•	•	•	•	•	•	•	•	•	
Oxides of nitrogen (NOx)	2014	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	100
	2013	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	
	2012	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	
Sulphur dioxide (SO <sub>2</sub> )	2014	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	100
	2013	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	
	2012	NR	NR	NR	NR	•	•	NR	NR	NR	NR	NR	NR	NR	
Volatile organic compounds (VOCs)	2014	NR	NR	NR	NR	•	NR	•	•	NA	NA	NR	NR	NR	78
	2013	NR	NR	NR	NR	•	NR	•	•	NA	NA	NR	NR	NR	
	2012	NR	NR	NR	NR	•	NR	•	•	NA	NA	NR	NR	NR	
Volume of methane (CH <sub>4</sub> ) emitted	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2013	•	•	•	NA	•	•	•	•	•	•	•	•	•	
	2012	•	•	•	NA	•	•	•	•	•	•	•	•	•	
Direct methane (CH <sub>4</sub> ) emission	2014	•	•	•	•	•	•	•	•	•	•	•	•	•	100
	2013	•	•	•	NA	•	•	•	•	•	•	•	•	•	
	2012	•	•	•	NA	•	•	•	•	•	•	•	•	•	

Remarks:

NA: Not available

NR: Not relevant

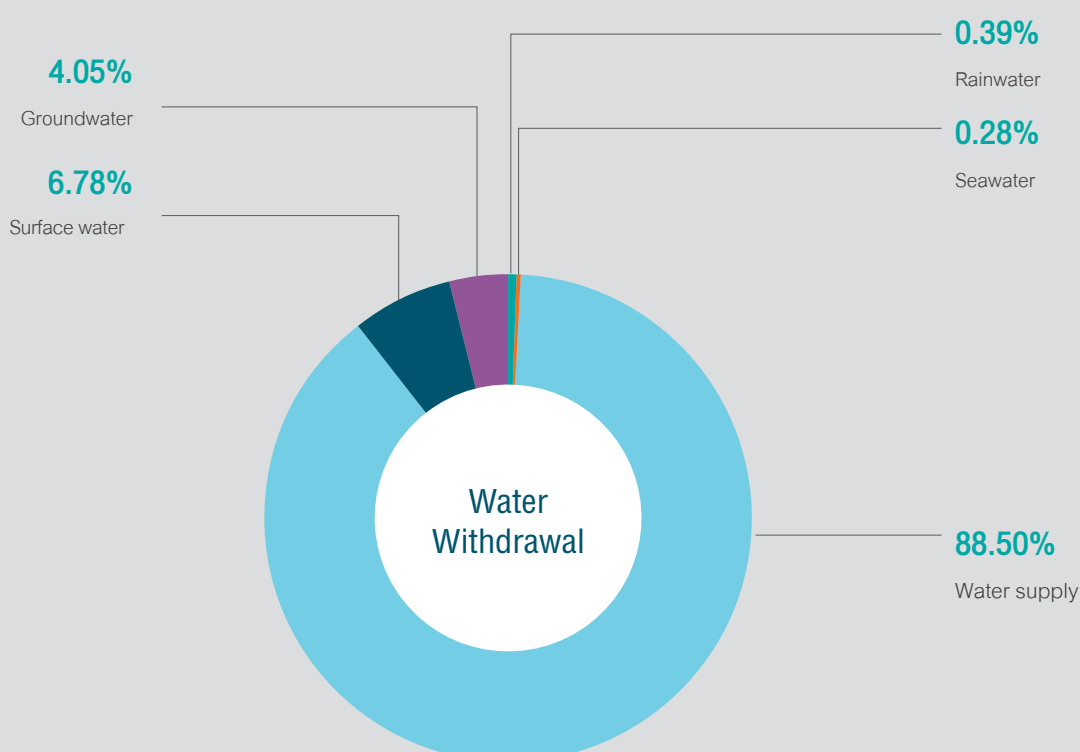


GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN8	Total water withdrawal	Million m <sup>3</sup>	2.38	2.92	2.74
	• Surface water	Million m <sup>3</sup>	0.01	0.01	0.19
	• Seawater	Million m <sup>3</sup>	0.00	0.01	0.01
	• Water supply	Million m <sup>3</sup>	2.36	2.74	2.42
	• Groundwater	Million m <sup>3</sup>	0.01	0.17	0.11
	• Rainwater	Million m <sup>3</sup>	NA	NA	0.01
	Total salt/brackish water (Seawater + Once through cooling)	Million m <sup>3</sup>	0.00	0.01	0.01
	Water from all other sources (Surface water + Groundwater)	Million m <sup>3</sup>	0.01	0.18	0.30
EN10	Recycle & Reuse water	Percentage of water withdrawal	0.90	0.99	5.91
		Million m <sup>3</sup>	0.02	0.03	0.17
	Water intensity	Million m <sup>3</sup> / million barrel oil equivalent	0.006	0.008	0.007

Remarks:

NA: not available

- Volume of surface water consumption increased due to the improvement of collection and reporting process. In 2014, volume of surface water consumption from PTT Research and Technology Institute's building was added in surface water quantity report.
- Volume of recycled water increased due to the improvement of collection and reporting process. In 2014, volume of recycled water from PTT Research and Technology Institute's building was added in recycled water quantity report.







## EFFLUENCE

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN22	Total water discharge	Million m <sup>3</sup>	0.832	1.202	1.262
	Chemical oxygen demand (COD)	Ton	12.610	105.277	121.284
	Biochemical oxygen demand (BOD)	Ton	1.318	3.824	3.848

### Remarks:

- Total water discharge and COD increased as PTT expanded scope of reporting PTT own and operate service station from 76 stations in 2013 to 85 stations in 2014.



## EMISSION

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN21	Volatile organic compounds (VOCs)	Ton	6,883.57	7,251.70	7,895.33
	VOCs intensity	Ton per million barrel oil equivalent	18.40	19.00	21.39
	Oxides of nitrogen (NOx)	Ton	1,373.04	1,165.34	1,080.84
	NOx intensity	Ton per million barrel oil equivalent	3.67	3.05	2.93
	Sulphur dioxide (SO <sub>2</sub> )	Ton	75.45	121.00	138.56
	SO <sub>2</sub> intensity	Ton per million barrel oil equivalent	0.20	0.32	0.38

### Remarks:

- VOCs emissions increased since 2012 as PTT expands scope of reporting to include Oil Terminals, Gas Terminals and Petroleum Terminals from 12 terminals in 2012 to 14 and 17 terminals in 2013 and 2014, respectively.
- VOCs emissions in 2012-2014 were revised to include emissions from Rayong Gas Separation Plant.
- VOCs emissions does not include PTT own and operating service station. PTT is studying and improvement of collection and assessment methods to be more completed that is expected to be completed in 2016.
- VOCs emissions since 2012 increased due to: Collection and reporting scope was expanded to include Oil Terminals, LPG Terminals and Petroleum Terminals from 12 terminals in 2012 to 14 and 17 terminals in 2013 and 2014 respectively.
- VOCs emissions in 2012-2014 were revised to include emissions from Gas Separation Unit at Rayong Province.
- VOCs emissions are not include Fuel stations in the PTT own and operate. PTT is under studying and improvement of collection and assessment methods to be more complete and will be reported in 2016.



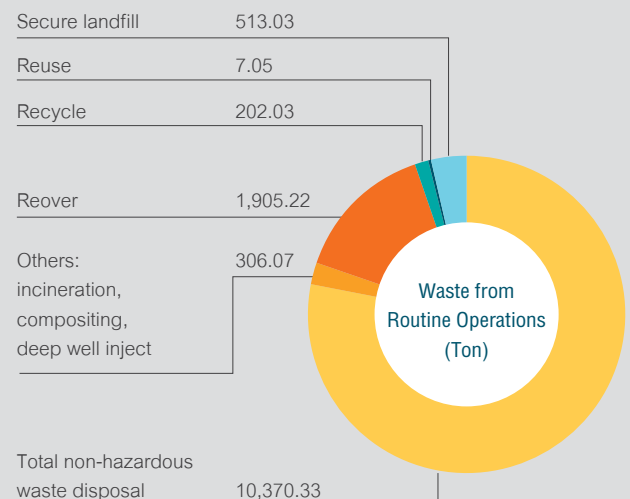
## WASTE

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN23	Waste from routine operations	Ton	5,300.50	13,117.03	13,303.74
	Total hazardous waste disposal	Ton	4,417.29	4,943.52	2,933.41
	• Secure landfill	Ton	1,240.13	895.03	513.03
	• Reuse	Ton	18.05	3.55	7.05
	• Recycle	Ton	33.94	167.72	202.03
	• Recover	Ton	2,344.43	2,852.56	1,905.22
	• Others: incineration, compositing, deep well inject	Ton	780.75	1,024.67	306.07
	Total non-hazardous waste disposal	Ton	NA	8,173.51	10,370.33
	• Landfill	Ton	NA	52.27	116.12
	• Reuse	Ton	NA	1.63	540.51
	• Recycle	Ton	NA	2,169.23	458.40
	• Recover	Ton	NA	0.00	8.47
	• Domestic waste	Ton	NA	5,950.38	9,246.82
	Waste from non-routine operation (e.g. construction waste, spill clean-up waste, crisis management waste)	Ton	NA	2,503.81	3,136.40
	Total hazardous waste disposal	Ton	NA	37.18	1,899.74
	• Secure landfill	Ton	NA	23.30	99.39
	• Recycle	Ton	NA	0.00	110.84
	• Recover	Ton	NA	12.88	724.58
	• Others	Ton	NA	1.00	964.93
	Total non-hazardous waste disposal	Ton	NA	2,466.63	1,236.67
	• Landfill	Ton	NA	0.00	68.51
	• Reuse	Ton	NA	2,450.00	1,080.20
	• Recycle	Ton	NA	0.00	78.99
	• Domestic waste	Ton	NA	16.63	8.96
	Waste on-site storage	Ton	NA	60.19	64.77

## Remarks:

NA: not available

- Volume of hazardous waste to secure landfill from routine operations decreased due to segregation of waste at source. As a result, waste can be disposed by appropriated method which aligns with PTT Group target is zero waste to landfill by 2020 target.
- Volume of domestic waste from routine operations increased due to scope expansion to include PTT own and operating service station from 76 stations in 2013 to 85 stations and 15 NGV mother stations in 2014.
- Volume of waste from non-routine operation includes waste generated from large construction of capital projects, spill clean-up and crisis management. 2014 boundary does not include waste from construction and natural gas pipeline project.
- Volume of waste on site storage includes hazardous and non-hazardous waste which remain in operation area until 31 December, 2014. 2014 scope includes Gas Separation Plant. Collection and reporting systems are under development for other operations and are expected to be ready for report in 2015.
- There is no threshold for hazardous waste since every operation must report total volume of hazardous waste.





## SPILLS

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN24	<b>Oil and Chemical Spills</b>				
	From PTT operational boundary				
	• Number of hydrocarbon spills	Number of spills	1	1	1
	• Volume of hydrocarbon spills	m <sup>3</sup>	1.52	6.00	0.30
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	-	-	-
	From 3 <sup>rd</sup> party (transportation): truck transportation				
	• Number of hydrocarbon spills	Number of spills	8	8	6
	• Volume of hydrocarbon spills	m <sup>3</sup>	63.90	40.95	42.03
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	-	-	-
	From 3 <sup>rd</sup> party (transportation): ship and barge transportation				
	• Number of hydrocarbon spills	Number of spills	NA	NA	NA
	• Volume of hydrocarbon spills	m <sup>3</sup>	NA	NA	NA
	• Number of non-hydrocarbon spills	Number of spills	NA	NA	NA
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	NA	NA	NA
	<b>Significant spill (Volume ≥ 100 barrel)</b>				
	From PTT operational boundary				
	• Number of hydrocarbon spills	Number of spills	0	0	1
	• Volume of hydrocarbon spills	m <sup>3</sup>	0.00	0.00	26.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	0.00	0.00	0.00
	From 3 <sup>rd</sup> party (transportation): truck transportation				
	• Number of hydrocarbon spills	Number of spills	1	3	3
	• Volume of hydrocarbon spills	m <sup>3</sup>	41.00	90.80	83.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	-	-	-
	From 3 <sup>rd</sup> party (transportation): ship and barge transportation				
	• Number of hydrocarbon spills	Number of spills	NA	NA	NA
	• Volume of hydrocarbon spills	m <sup>3</sup>	NA	NA	NA
	• Number of non-hydrocarbon spills	Number of spills	NA	NA	NA
	• Volume of non-hydrocarbon spills	m <sup>3</sup>	NA	NA	NA

### Remarks:

NA: not available

- Volume of hydrocarbon and non-hydrocarbon spills include spills which occurred from truck and marine transportation in operational areas that result in more than 1 barrel of spill released to the environment. PTT manages oil spills by executing spill response procedures to control the spills in the shortest time possible and to minimize the environmental impacts. For example, booms and skimmers are used to minimize environmental impacts.



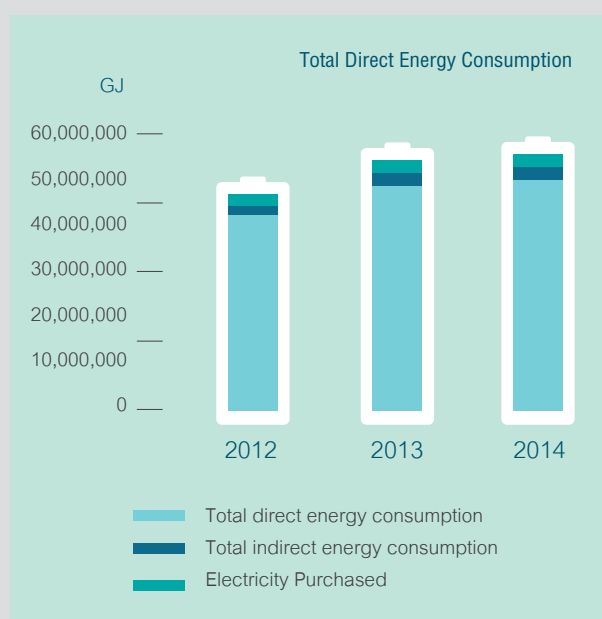
## ENERGY

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
EN3	Total direct energy consumption	GJ	41,703,350	47,992,403	49,446,447
	Total indirect energy consumption	GJ	2,570,237	2,676,817	2,817,088
	Electricity purchased	GJ	2,570,237	2,676,817	2,817,088
GRI	Required Data	Unit	2012 PTT Group	2013 PTT Group	2014 PTT Group
EN3	Total direct energy consumption				
	• PTT operational control	GJ	329,831,237	281,660,693	319,481,452
	Total indirect energy consumption	GJ	NA	NA	24,400,429
EN5	Direct energy intensity				
	• Oil and gas production	GJ/mboe	215,725	228,497	165,510
	Direct energy intensity				
	• Refinery throughput	GJ/tonnes	1.85	1.53	1.13
	Direct energy intensity				
	• Petrochemical throughput	GJ/tonnes	5.19	3.76	11.20

## Remarks:

NA: Not Available

- PTT does not use fuel oil, recycled by-product, coke, and steam. Therefore, only electricity purchased is counted as indirect energy consumption.
- PTT began reporting energy consumption based on boundary of operational control approach similar to GHG inventory in 2012.
- Intensity of Oil & Gas Production, Refinery and Petrochemical follows GHG intensity reporting.
- Reduction in energy intensity was partly due to the implementation PTT Group Energy Management System Project in 2013.
- Energy intensity in 2013 changed as IRPC's Refinery and Petrochemical plants were included in system as planned.
- Boundary of energy consumption reported is in line with scope of GHG inventory of PTT Group for operation control assets.







## GHG AND METHANE (CH<sub>4</sub>) EMISSION

### GHG emission

GRI	Required Data	Unit	2012 PTT	2013 PTT	2014 PTT
	Total GHG emissions	Ton CO <sub>2</sub> equivalents	11,331,920	10,922,073	11,677,560
EN15	GHG scope 1	Ton CO <sub>2</sub> equivalents	10,947,530	10,539,849	11,272,486
EN16	GHG scope 2	Ton CO <sub>2</sub> equivalents	384,390	382,224	405,074
EN17	GHG scope 3	Ton CO <sub>2</sub> equivalents	121,457,738	122,310,077	122,819,319
EN18	GHG intensity				
	• Oil and gas production	Ton CO <sub>2</sub> equivalents/Million Barrel Oil Equivalent	46,941	48,995	35,617
	• Refinery	Ton CO <sub>2</sub> equivalents/Ton refinery throughput	0.1395	0.1286	0.0877
	• Petrochemical	Ton CO <sub>2</sub> equivalents/Ton petrochemical product	0.6748	0.6817	0.6461
EN15	GHG Scope 1				
	• PTT operational control	Ton CO <sub>2</sub> equivalents	32,424,531	31,822,632	31,776,471
	• PTT equity share	Ton CO <sub>2</sub> equivalents	21,553,568	21,002,012	21,433,120
EN16	GHG Scope 2				
	• PTT operational control	Ton CO <sub>2</sub> equivalents	1,938,993	2,356,345	2,406,097
	• PTT equity share	Ton CO <sub>2</sub> equivalents	1,164,257	1,375,305	1,400,866

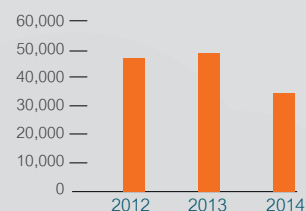
#### Remarks:

NA: Not Available

- The Organizational boundary of PTT based on operational control approach is complied with PTT Group SSHE Governance Policy.
- The Organizational boundary of PTT based on equity share approach includes every domestic companies that PTT directly owns more than 20% shares or indirectly own 100% share.
- In 2014, PTT has decided to report GHG emissions for PTT only instead of PTT and PTTEP to be consistent with GHG inventory.
- Scope 3 emissions include the combustion of fuel sold by PTT only.
- The GHG intensity reporting boundary of Refinery Business includes TOP, IRPC, PTTGC and BCP.
- The GHG intensity reporting boundary of Petrochemical Business includes IRPC, HMC, PTTGC and PPCL (before merged to become one facility under PTTGC).

#### Greenhouse Gas Intensity from Oil and Gas Production

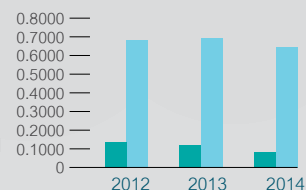
Oil and Gas Production  
(Ton CO<sub>2</sub> equivalents/  
Million Barrel of Oil Equivalent)



#### Greenhouse Gas Intensity from Refinery and Petrochemical

GHG Intensity Refinery  
(Ton CO<sub>2</sub> equivalents/  
Ton refinery throughput)

GHG Intensity Petrochemical  
(Ton CO<sub>2</sub> equivalents/  
Ton petrochemical product)



### Methane (CH<sub>4</sub>) Emitted and CH<sub>4</sub> Emission

GRI	Required Data	Unit	2012 PTT Group	2013 PTT Group	2014 PTT Group
	Volume of methane emitted (leakage, venting, and flaring)	m <sup>3</sup>	NA	49,252,604	67,356,513
	Direct CH <sub>4</sub> emissions (extracted from GHG)	Ton	NA	48,142	60,305
OG6	Volume of flared hydrocarbon	m <sup>3</sup>	NA	NA	5,493,003.65
	Volume of vented hydrocarbon	m <sup>3</sup>	NA	NA	25,788.41

#### Remarks:

- PTT carries out methane leakage analysis from various cases. Continuous reporting and preventive measures of future leakage are also considered.
- The volume of methane emitted includes leakage (fugitive), venting from CO<sub>2</sub> separation process, methane emitted from process and vented emission, and flaring.
- The direct CH<sub>4</sub> emissions include those from aforementioned sources, as well as direct CH<sub>4</sub> emitted from combustion sources.
- Increase in Methane emission in 2014 was due to the partnership under Natural Gas Star Program, resulting in better accuracy and completeness in quantification of Methane leak. PTT is under the process of recalculating previous year's emission and is expected to be reported in next year's publication.

## AWARDS AND RECOGNITIONS

In 2014, PTT received 64 awards and recognitions from 32 institutions as follows:

### Prime Minister's Industry Award

Category: Energy Management from Rayong Gas Separation Plant

Given by Ministry of Industry

### Sustainability Report Award 2014

Given by Thai Listed Companies Association, The Securities and Exchange Commission, and ThaiPat Institute.



## National Awards

31 Awards  
/ institutions  
20



### Thailand Energy Award 2014

Category: Energy Management Team

Given by Department of Alternative Energy Development and Efficiency, Ministry of Energy



### State-owned Enterprise Award 2014,

3 Awards in the following categories:

- Best Organizational Management Award
- Best Innovation Award from Green Amazon Bio Cup for the 5<sup>th</sup> consecutive year
- Best Organizational Leadership Award for Mr. Pailin Chuchottaworn, Chief Executive Officer and President

Given by Ministry of Finance

### Excellence Awards 2013

Given by Thailand Management Association

### CSR Recognition Award 2014

Given by the Stock Exchange of Thailand

### Best of the Best Machinery Technology Award

Category: Energy and Environment Machinery from the research and development of the transparent solar cell.

Given by National Innovation Agency

### SET Awards 2014,

2 Awards in the following categories:

- Outstanding Corporate Social Responsibility Awards for the 5<sup>th</sup> consecutive year
- Top Corporate Governance Report Awards

Given by The Stock Exchange of Thailand, Thai Institute of Directors and the Money and Banking Magazine

### Outstanding Brand Image of Thailand Automotive Quality Award 2014

Category: Outstanding products related with vehicle

2 Awards as follows:

- Outstanding Satisfaction for Fuel
- Outstanding Satisfaction for Gas Station

Given by Inter-Media Consultant Co., Ltd., Custom Asia Co., Ltd. and Manager Newspaper

### The Most Powerful Brands of Thailand 2014

Category: Gas station for the 2<sup>nd</sup> consecutive year

Given by Chulalongkorn University, Faculty of Commerce and Accountancy



**MEMBER OF**  
**Dow Jones**  
**Sustainability Indices**  
In Collaboration with RobecoSAM

**PTT maintains the status as 2014 member in Dow Jones Sustainability World Index (DJSI World)**

Oil and Gas Industry (OIG) for the 3<sup>rd</sup> consecutive year

Given by Dow Jones Sustainability Indices (DJSI)



**10<sup>th</sup> Corporate Governance Asia Recognition Awards 2014: The Best of Asia**

2 Awards in the following

- Asia's Icon on Corporate Governance
- Asian Corporate Director of the Year Awards 2014 for Mr. Pailin Chuchottaworn, Chief Executive Officer and President

Given by Corporate Governance Asia Magazine



## AWARDS AND RECOGNITIONS

**PTT is ranked 180<sup>th</sup> on Forbes Global 2000 Ranking 2014**

Given by Forbes Magazine



In 2014, PTT received 64 awards and recognitions from 32 institutions as follows:

**Platts Top 250 Global Energy Company Rankings for 2014**

Category: Overall Global Performance ranked 24<sup>th</sup>

Given by Platts

**The Asset Corporate Awards 2014**

Category: The Platinum Award Winner for the 6<sup>th</sup> consecutive year

Given by The Asset Magazine

**R&D 100 Award 2014**

For PTT DIESEL CNG

Designed by PTT Research Technology Institute in cooperation with Sammitr Green Power Co., Ltd.

Given by American Industrial Research, R&D Magazine

**Oil & Gas Award 2014**

Category: Best Fully Integrated Company Asia

Given by World Finance Magazine

**PTT is ranked 84<sup>th</sup> on the Fortune Global 500**

Given by Fortune Global 500 Magazine

**Asian Excellence Recognition Awards 2014**

4 Awards as follows:

- Best Investor Relations for the 4<sup>th</sup> consecutive year
- Best Environment Responsibility for the 4<sup>th</sup> consecutive year
- Best CSR for the 2<sup>nd</sup> consecutive year
- Best Corporate Communications Team

Given by Corporate Governance Asia Magazine





# GRI AND UNGC CONTENT INDEX



## Global Reporting Initiative (GRI)

### General Standard Disclosures

Profile			Page/Link	External Assurance
Strategy and Analysis	G4-1	CEO statement	6-7	-
	G4-2	Description of key impacts, risks, and opportunities	6-7	-
Organizational Profile	G4-3	Name of the organization	8	-
	G4-4	Primary brands, products, and/or services	8	-
	G4-5	Location of organization's headquarters	9	-
	G4-6	Number of countries where the organization operates	8-9	-
	G4-7	Nature of ownership and legal form	8	-
	G4-8	Markets served	8-9	-
	G4-9	Scale of the company	8-9	-
	G4-10	Employee by categories	50-51	-
	G4-11	Employees covered by collective bargaining agreements	41	-
	G4-12	Organization's supply chain	8	-
	G4-13	Significant changes during the reporting period	17	-
	G4-14	Precautionary approach	23, 31 <a href="http://www.pttplc.com/en/Sustainability/Environment/Climate-Strategy/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Climate-Strategy/Pages/default.aspx</a>	-
	G4-15	Externally developed initiatives	<a href="http://www.pttplc.com/th/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx">www.pttplc.com/th/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx</a>	-
	G4-16	Membership of associations	<a href="http://www.pttplc.com/th/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx">www.pttplc.com/th/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx</a>	-
Identified Material Aspects and Boundaries	G4-17	Organization's consolidated financial statements	2	71
	G4-18	Process for defining report content	2	71
	G4-19	Material aspect identified	3	71
	G4-20	Aspect boundary within the organization	3	71
	G4-21	Aspect boundary outside the organization	3	71
	G4-22	Restatement of information	3	71
	G4-23	Significant changes in the scope and aspect boundary	2	71
Stakeholder Engagement	G4-24	List of stakeholder group	20	71
	G4-25	Basis for identification and selection of stakeholders	20, <a href="http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx">www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx</a>	71
	G4-26	Approach to stakeholder engagement	20, <a href="http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx">www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx</a>	71
	G4-27	Stakeholders' topics and concerns	20	71
Report Profile	G4-28	Reporting period	1	-
	G4-29	Date of most recent previous report	1	-
	G4-30	Reporting cycle	1	-
	G4-31	Contact point	1	-
	G4-32	GRI Content Index	1, 65-68	-
	G4-33	External assurance	69-72	-
Governance	G4-34	Governance structure	<a href="http://www.pttplc.com/en/About/Organization/Pages/Organization-Chart.aspx">www.pttplc.com/en/About/Organization/Pages/Organization-Chart.aspx</a>	-
	G4-35	Process for delegating authority	<a href="http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx">www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx</a>	-
	G4-36	Whether the organization has appointed a position with responsibility for sustainability	18	-
	G4-38	Composition of the highest governance body	<a href="http://www.pttplc.com/en/About/Organization/Pages/PTT-committee.aspx">www.pttplc.com/en/About/Organization/Pages/PTT-committee.aspx</a> <a href="http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx">www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx</a> Annual Report	-

Profile			Page/Link	External Assurance
	G4-39	Whether the Chair of the highest governance body is also an executive officer	<a href="http://www.pttplc.com/en/About/Organization/Pages/PTT-committee.aspx">www.pttplc.com/en/About/Organization/Pages/PTT-committee.aspx</a> <a href="http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx">www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx</a>	-
	G4-40	Nomination and selection processes for the highest governance body	Corporate Governance Handbook - Page 30 'Composition, Qualification and Appointment of the Board'	-
	G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	Corporate Governance Handbook - Page 32 'Independence of the Board'; Page 84 'PTT's Conflict of Interest Disclosure Form'	-
	G4-44	Evaluation of the highest governance body's performance	<a href="http://www.pttplc.com/en/About/Documents/CG%20Handbook%202013%20EN/01%20Corporate%20Governance%20Policy.pdf">www.pttplc.com/en/About/Documents/CG%20Handbook%202013%20EN/01%20Corporate%20Governance%20Policy.pdf</a>	-
	G4-46	Highest governance body's role in reviewing the organization's risk management processes	<a href="http://www.pttplc.com/en/About/Documents/CG%20Handbook%202013%20EN/01%20Corporate%20Governance%20Policy.pdf">www.pttplc.com/en/About/Documents/CG%20Handbook%202013%20EN/01%20Corporate%20Governance%20Policy.pdf</a>	-
	G4-48	Position that formally reviews and approves the organization's sustainability report	2	-
Ethics and Integrity	G4-56	Organization's values, principles, standards and norms of behavior	<a href="http://www.pttplc.com/th/About/Pages/Vision-Mission-Values.aspx">www.pttplc.com/th/About/Pages/Vision-Mission-Values.aspx</a>	-
	G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior	<a href="http://www.pttplc.com/en/About/Pages/complaint-and-whistleblowing-policy.aspx">www.pttplc.com/en/About/Pages/complaint-and-whistleblowing-policy.aspx</a>	-
	G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior	<a href="http://www.pttplc.com/en/About/Pages/complaint-and-whistleblowing-policy.aspx">www.pttplc.com/en/About/Pages/complaint-and-whistleblowing-policy.aspx</a>	-

## Specific Standard Disclosures: Aspects DMA

### Economic

Material Aspects	Page/Link
Economic Performance	14-15; <a href="http://www.pttplc.com/en/About/Pages/Vision-Mission-Values.aspx">www.pttplc.com/en/About/Pages/Vision-Mission-Values.aspx</a>
Indirect Economic Impact	14-15, 36-37, 45 <a href="http://www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx</a> <a href="http://www.pttplc.com/en/Sustainability/Social/Good-Corporate-Citizenship/Pages/Society-and-Community.aspx">www.pttplc.com/en/Sustainability/Social/Good-Corporate-Citizenship/Pages/Society-and-Community.aspx</a>

### Environmental

Material Aspects	Page/Link
Energy	32; <a href="http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx</a>
Water	31; <a href="http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx</a>
Biodiversity	36-37; <a href="http://www.pttplc.com/en/Sustainability/Environment/Biodiversity/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Biodiversity/Pages/default.aspx</a>
Emission	32-33; <a href="http://www.pttplc.com/en/Sustainability/Environment/Climate-Strategy/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Climate-Strategy/Pages/default.aspx</a> <a href="http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx</a>
Effluent and Waste	33; <a href="http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx">www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx</a>
Products and Services	28-29; <a href="http://www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx">www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx</a>
Transport	33-34; <a href="http://www.pttplc.com/th/Sustainability/Social/Security-Safety-Health/Pages/default.aspx">www.pttplc.com/th/Sustainability/Social/Security-Safety-Health/Pages/default.aspx</a>
Supplier Environmental Assessment	26; <a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>

### Social

Material Aspects	Page/Link
Employment	40-41; <a href="http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx">www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx</a>
Occupational Health and Safety	35; <a href="http://www.pttplc.com/th/Sustainability/PTT-Sustainability/Governance/Pages/sshe-management.aspx">www.pttplc.com/th/Sustainability/PTT-Sustainability/Governance/Pages/sshe-management.aspx</a>
Training and Education	40-41; <a href="http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx">www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx</a>
Supplier Assessment for Labor Practices	26; <a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>
Assessment	18
Supplier Human Rights Assessment	<a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>
Local Communities	36; <a href="http://www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx</a>

Material Aspects	Page/Link
Anti-corruption	19; <a href="http://www.pttplc.com/en/Sustainability/Social/Fair-Practice/Pages/default.aspx">www.pttplc.com/en/Sustainability/Social/Fair-Practice/Pages/default.aspx</a>
Supplier Assessment for Impacts on Society	<a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>
Asset Integrity and Process Safety	35; <a href="http://www.pttplc.com/en/Sustainability/Social/Security-Safety-Health/Pages/default.aspx">www.pttplc.com/en/Sustainability/Social/Security-Safety-Health/Pages/default.aspx</a>
Product and Service Labelling	29; <a href="http://www.pttplc.com/th/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx">www.pttplc.com/th/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx</a>
Fossil Fuel Substitutes	29

## Specific Standard Disclosures: Indicators

### Economic

Profile	Page/Link	Comments
G4-EC1 (OGSD)	Direct economic value generated and distributed	49
G4-EC2 (OGSD)	Implications of climate change	23
G4-EC4	Financial assistance	49
G4-EC7 (OGSD)	Development and impact of infrastructure investments and services supported	45-48
G4-EC8 (OGSD)	Significant indirect economic impacts	45-48

### Environmental

Profile	Page/Link	Comments
G4-EN3 *	Direct energy consumption	13, 61
G4-EN4	Indirect energy consumption	61
G4-EN5 (OGSD) *	Energy intensity	13, 61
G4-EN6	Reduction of energy consumption	32
G4-EN8 (OGSD) *	Water withdrawal	57
G4-EN9 (OGSD)	Water sources affected by with water drawal	31
G4-EN10	Water recycled and reused	57
G4-EN12	Description of significant impacts on biodiversity	36
G4-OG4	Operating sites with biodiversity risk assessment	36
G4-EN15 (OGSD) *	Direct GHG emissions (Scope 1)	62
G4-EN16 (OGSD) *	Energy indirect GHG emissions (Scope 2)	62
G4-EN17 (OGSD)	Other indirect GHG emissions (Scope 3)	62
G4-EN18 (OGSD)	GHG emissions intensity	62
G4-EN21 (OGSD) *	NOx, SOx, and other emissions	58
G4-EN22 *	Water discharge	58
G4-EN23 (OGSD) *	Waste	59
G4-EN24 (OGSD) *	Spills	60
G4-OG6 *	Volume of flared and vented hydrocarbon	62
G4-EN27	Environmental impacts of products and services	29, 42
G4-EN29	Environmental fines and sanctions	33
G4-EN30	Environmental impacts of transporting	33
G4-EN32	Suppliers screen using environmental criteria	26; <a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>

### Social

Profile	Page/Link	Comments
G4-LA1	New employee hires and employee turnover	50-51
G4-LA2	Benefits for employees	<a href="http://www.pttplc.com/th/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx">www.pttplc.com/th/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx</a>
G4-LA3	Return to work after parental leave	51
G4-LA6 (OGSD) *	Rates of injury, occupational diseases, lost days, absenteeism, fatality	52-54
G4-LA7	Workers with high incidence or risk	35
G4-LA9 *	Training hours	51
G4-LA11	Employee performance review	41

Profile		Page/Link	Comments
G4-LA12	Breakdown of employees	50 - 51	
G4-LA14	Suppliers screen using labor practices criteria	26; <a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>	
G4-LA15	Negative impacts for labor practices in the supply chain	26	
G4-LA16	Grievances about labor practices	-	No labor practices complaints in 2014
G4-HR3	Incidents of discrimination and corrective actions taken	-	No case of employee discrimination was reported in 2014
G4-HR4	Freedom of association and collective bargaining	41	
G4-HR9	Human rights review	19	
G4-HR10	Suppliers screen using human rights criteria	26; <a href="http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx">www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx</a>	
G4-SO1	Local community engagement, impact assessments, and development programs	36	
G4-SO2 (OGSD)	Negative impacts on local communities	36	
G4-OG10	Number and description of disputes with local communities	36	
G4-SO4	Communication and training on anti-corruption policies	19	
G4-SO5	Confirmed incidents of corruption	19	
G4-SO6	Political contributions	-	Political contribution is prohibited under PTT's regulations
G4-SO8	Laws and regulations fines and sanctions	33	
G4-SO9	Suppliers screened using criteria for impacts on society	26	
G4-OG12	Operations where involuntary resettlement took place	-	None of our projects required relocation
G4-OG13	Process safety events, by business activity	35	
G4-PR2	Incidents of non-compliance concerning health and safety impacts of products	-	No incidents of non-compliance concerning product health and safety in 2014
G4-PR4	Incidents of non-compliance concerning products and service information and labeling	-	No incidents of non-compliance with products labelling in 2014.
G4-PR5	Customer satisfaction	29	
G4-OG14	Volume of biofuels produced	29	

(OGSD) means indicators with added commentary in GRI Oil and Gas Sector Supplement

★ means indicator was verified by external assurer

## United Nations Global Compact Principles (UNGC)

UNGC Principles		Page
Human Rights	Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights	18-19
	Principle 2: Businesses should make sure that they are not complicit in human rights abuses.	19
Labour	Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	41
	Principle 4: The elimination of all forms of forced and compulsory labour.	19
	Principle 5: The effective abolition of child labour.	19
	Principle 6: The elimination of discrimination in respect of employment and occupation.	19
Environment	Principle 7: Businesses should support a precautionary approach to environmental challenges.	23, 28 - 29, 32, 57 - 58, 62
	Principle 8: Undertake initiatives to promote greater environmental responsibility.	23, 45
	Principle 9: Encourage the development and diffusion of environmentally friendly technologies.	42
Anti-corruption	Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.	19



## Sustainability Management Framework Assurance Statement

PTT Public Company Limited (PTT) appointed ERM-Siam Company Limited (ERM) to provide external assurance in relation to the implementation of the PTT Group Sustainability Management (SM) Framework, as set out below.

### Scope

The assurance was based on whether PTT Group's performance is in accordance with the 10 elements of the PTT Group SM Framework.

The PTT SM Framework is presented at <http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Sustainability-Governance-and-Framework.aspx>

### Our Approach

We planned and performed our work to obtain the information and explanations that we believed were necessary to provide a basis for our assurance conclusion.

Between October and December 2014, ERM's multi-disciplinary team of sustainability, environment, health and safety and assurance specialists performed the following tasks.

- Visited the following 12 businesses to assess the status of implementation of PTT Group SM Framework:
  1. Gas Separation Plant (GSP);
  2. Gas Transmission Pipeline (GTM);
  3. Global Power Synergy Company Limited (GPSC);
  4. HMC Polymers Company Limited (HMC);
  5. IRPC Public Company Limited (IRPC); and
  6. PTT Asahi Chemical Company Limited (PTTAC);
  7. PTT Exploration and Production Public Company Limited (PTTEP);
  8. PTT Global Chemical Public Company Limited (PTTGC);
  9. PTT LNG Company Limited (PTTLNG);
  10. PTT Phenol Company Limited (PPCL);
  11. PTT Polymer Logistics Company Limited (PTTPL);
  12. Thaioil Public Company Limited (TOP).
- Performed desk-based screening of PTT Group's SM Elements comprising: Leadership and Accountability; Organizational Governance; Human Rights; People; Safety, Health and Environment; Fair Operating Practices; Corporate Citizenship; Supply Chain Management; Product Stewardship; Reporting and Reputation; Stakeholder Engagement for 12 businesses to identify sustainability elements material to their business and a sample of selected underlying controls to test in terms of content, deployment, conformance, and performance;
- Conducted face-to-face interviews with participating business senior management and functional units representatives to assess leadership accountability and company's direction on sustainability;
- Reviewed selected management processes (i.e. 'control' mechanisms) in place to comment its consistency with requirements of PTT Group SM Framework;
- Reviewed selected 2014 non-financial performance data and information and on a risk basis; and
- Identification of opportunities for continual improvement.

### Assurance Standard

ERM based our assurance assessment based on the International Standard on Assurance Engagements (ISAE 3000) and PTT Group's Operational Excellence Management System (OEMS) Maturity Assessment program.

### Assurance Level

Limited assurance.

### Limitations

The assessment results are subject to inherent uncertainties, given the reliability of the reported information and available methods for determining maturity level and the underlying information. It is important to understand our assurance conclusions in this context.

Our scope did not include:

- Testing the information technology ('IT') systems used to collect and aggregate site data. We did not perform procedures relating to checking the aggregation or calculation of data within the IT systems;
- Testing and verification of source data;
- Any comparisons made against historical data, with the exception of specific sustainability targets;
- Any site visits or physical inspections of activities or operations of any of the participating businesses; or
- Attending any stakeholder engagement activities.

### Our Independence and Assurance Team

ERM's Code of Business Conduct and Ethics is applied across our businesses to ensure that all our staff maintain high ethical and legal standards in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest and the maintenance of confidentiality and ethical walls.

During 2014, ERM worked with PTT on a range of consulting engagements. ERM operated strict conflict checks to ensure that the independence of individuals involved in our assurance activities was not compromised. Therefore, we do not consider there to be a conflict between the other services provided by ERM and those performed by our assurance team for PTT Group.

### Our Conclusions

Based on the assessment conducted in 2014, the overviews of the implementation of the PTT Group SM Framework are summarized as followings:

#### Observations:

- To a varying degree, the businesses assessed had generally demonstrated that they had in place or were implementing, internal controls to deliver conformance with the PTT Group SM Framework. However, for some businesses that were not implementing Operational Excellence Management System (OEMS) or setting themselves against Global Sustainability Initiatives were generally not as familiar with PTT Group SM Framework requirements. We found that for these companies the practical interpretation of the sustainable development concept was not fully defined, with formal programmes and strategies at an early stage of development.
- The majority of the businesses we reviewed had appropriate controls in place to maintain compliance with PTT Group SM Framework and to manage the non-financial risks they face in particular with regards to Safety, Health and Environment, Corporate Citizenship and People Elements. Common barrier for most companies in advancement to the next level of sustainability performance is sharing and extending of companies' same level of commitment to business partners, contractors and suppliers.

#### Overall Recommendations

We recommend that PTT:

- Provides more support to smaller businesses to help them understand the sustainability issues material to their businesses and enable them to develop practical solutions to manage their sustainability challenges.
- Provides additional corporate level guidance for businesses to take action and engage with their business partners, contractors and suppliers to develop more sustainable practices.

To ensure that PTT continues to improve, ERM has provided recommendations and suggestions that have been outlined in a detailed report presented to PTT management.



ERM-Siam Company Limited (ERM)  
Bangkok, Thailand  
17 February 2015

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## LRQA Assurance Statement

### Relating to PTT Public Company Limited's Corporate Sustainability Report for the calendar year 2014

This Assurance Statement has been prepared for PTT Public Company Limited in accordance with our contract but is intended for the readers of this Report.

#### Terms of engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by PTT Public Company Limited (PTT) to provide independent assurance on its 'Corporate Sustainability Report 2014' ("the report") against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement of the verifier using LRQA's verification approach. LRQA's verification approach is based on current best practise and uses the principles of AA1000AS (2008) - inclusivity, materiality, responsiveness and reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered PTT's operations and activities in Thailand and specifically the following requirements:

- Confirming that the report is in accordance with:
  - GRI G4's reporting guidelines and core option
  - GRI G4's oil and gas sector disclosures
- Evaluating the accuracy and reliability of data and information for only the selected specific standard disclosures listed below:
  - Environmental : energy consumption within the organization (G4-EN3), energy intensity (G4-EN5), water withdrawal by source (G4-EN8), direct and indirect GHG emissions (G4-EN15-16), NO<sub>x</sub>, SO<sub>x</sub>, and other significant air emissions (VOC) (G4-EN21), water discharge by quality and volume (G4-EN22), total weight of waste by type and disposal method (G4-EN23), number and volume of significant spill (G4-EN24), volume of flared and vented hydrocarbon (G4-OG6), and
  - Social : type of injury and rates of injury, occupational diseases, lost days (G4-LA6) and average hours of training per employee (G4-LA9).

Our assurance engagement excluded data and information of PTT's operations and activities outside of Thailand and its suppliers, contractors and any third-parties mentioned in the report.

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

#### LRQA's Opinion

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

- Met the requirements above
- Disclosed reliable performance data and information
- Covered all the issues that are important to the stakeholders and readers of this report.

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

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

#### LRQA's approach

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

- Assessing PTT's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through interviewing PTT's employees who are directly engaging with stakeholder groups, and reviewing associated records.
- Reviewing PTT's process for identifying and determining material issues to confirm that the right issues were included in their report. We did this by benchmarking reports written by PTT and its peers to ensure that sector specific issues were included for comparability.



We also tested the filters used in determining material issues to evaluate whether PTT makes informed business decisions that may create opportunities that contribute towards sustainable development.

- Auditing PTT's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.
- Reviewing supporting evidence made available by a representative facility of each of PTT's business operations at:
  - the head office and petro station in Bangkok
  - a gas pipeline construction project in Northern Route, Nakornsawan
  - an oil and gas terminal in Khonkhen, and
  - the NGV mother station and gas pipeline operation in Khonkhen.

### Observations

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

- Stakeholder inclusivity:  
We are not aware of any key stakeholder groups that have been excluded from PTT's stakeholder engagement process. However, we believe that future reports should provide more information about PTT's challenges in and strategies for engaging with local communities and the public sector.
- Materiality:  
We are not aware of any material issues concerning PTT's sustainability performance that have been excluded from the report. It should be noted that PTT has established extensive criteria for determining material aspects and that these criteria are not biased to the company's management.
- Responsiveness:  
PTT has processes for responding to various stakeholder groups. However, we believe that future reports should explain how PTT reviews and addresses environment and social impacts associated with its gas pipeline construction projects. This is particular to focusing more on relevant construction engineering and quality management guidelines to further minimize these impacts.
- Reliability:  
PTT uses a well-defined and centralized system to collect and calculate its data and information associated with the selected specific standard disclosures listed above. PTT also carries out its own internal data verification process to ensure the reliability of its reported data and information.

### LRQA's competence and independence

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

This verification is the only work undertaken by LRQA for PTT and as such it does not compromise our independence or impartiality.

Signed:

Dated: 5 March 2015

Opart Charuratana  
LRQA Lead Verifier  
On behalf of Lloyd's Register Quality Assurance  
14th Floor, Sirinrat Building, 3388/46 Rama IV Road  
Klongton, Klongtoey, Bangkok 10110 THAILAND

LRQA Reference: BGK6021339

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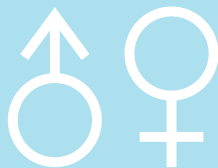
# Survey of Reader's Opinion

Corporate Sustainability Report 2014

Please mark **X** in the box ☐ and provide your views in the space provided

01

Please fill in the basic information



Gender

☐ Male ☐ Female

Please specify your relationship with PTT

- ☐ Investor/ Shareholder ☐ Customer  
☐ Communities around PTT's operations  
☐ Supplier ☐ Academic  
☐ Government ☐ Media ☐ Student  
☐ Others (please specify).....

02

How did you receive the report?

- ☐ Annual General Meeting of Shareholders  
☐ Seminar/Lecture/Exhibition  
☐ PTT's operations  
☐ PTT's website  
☐ Other websites (Please specify).....  
☐ Others (Please specify).....

03

What is the reason for your interest in Corporate Sustainability Report 2014?

- ☐ To gain information about PTT  
☐ To obtain investment information  
☐ In purpose of research and education  
☐ To prepare your own Sustainability Report  
☐ Others (please specify).....

04

Please rate your satisfaction of the presentation of Corporate Sustainability Report 2014

Language  
Supporting graphics, graphs and tables  
Report design  
Overall satisfaction with the report

High Medium Low Improvement

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

05

Please rate your satisfaction in the completeness and reliability of information in the Corporate Sustainability Report 2014

Understanding of PTT's material aspects  
Relevance of performance results to PTT's sustainability strategy  
Completeness and reliability of contents  
Contents in line with your expectations

High Medium Low Improvement

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

06

Does this report include all PTT's sustainability material aspects?

- ☐ Yes  
☐ No If not, please specify which aspects should be added to the future Corporate Sustainability Report

07

Which additional aspects do you think should be considered in PTT's implementation of sustainability?

08

Please provide other comments and suggestions for the improvement of the future Corporate Sustainability Report.





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