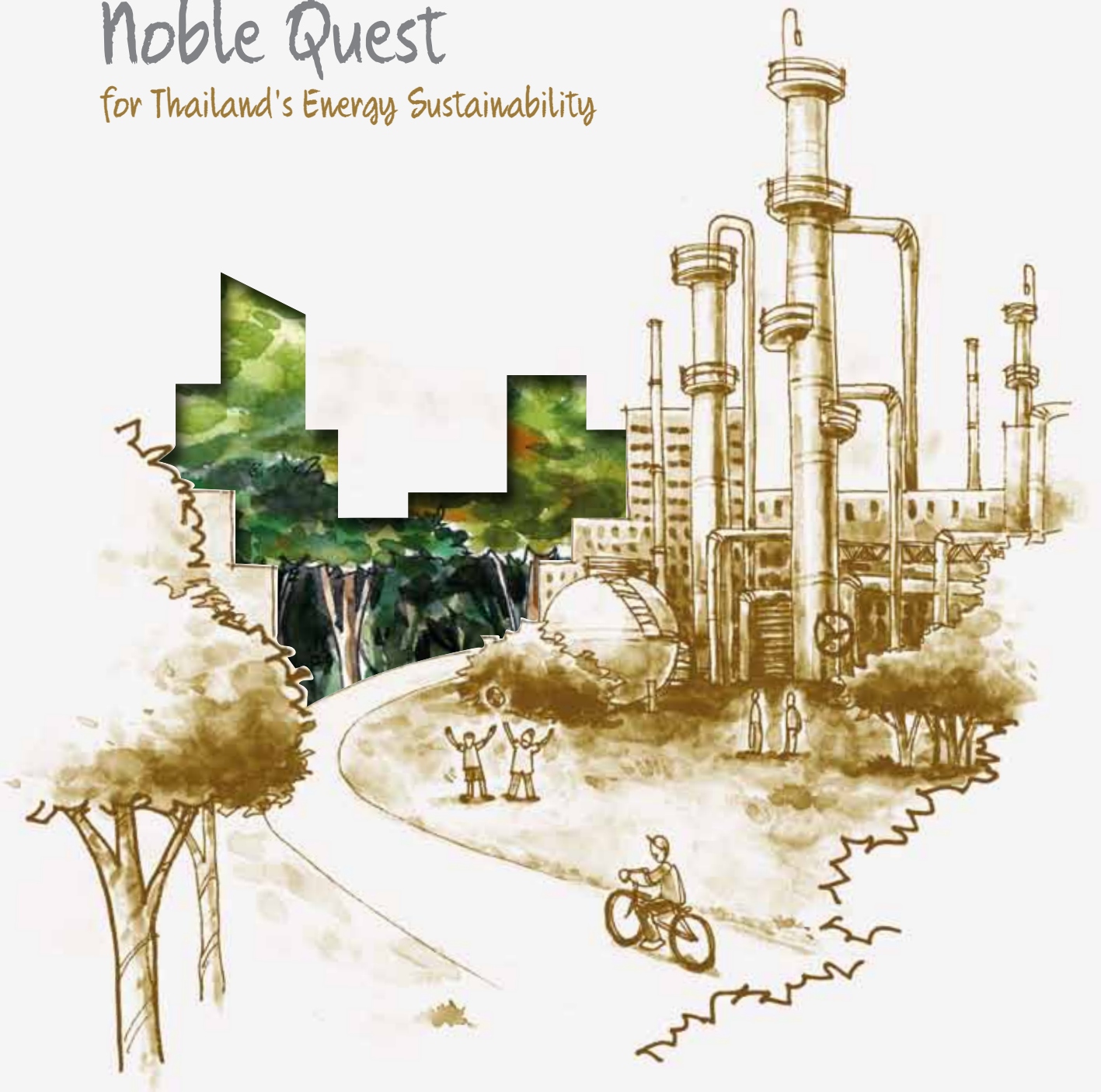




Carrying on Noble Quest

for Thailand's Energy Sustainability



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Contact Information

PTT Group Sustainability Management Project



PTT Public Company Limited
555 Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900



66-2537-1636



sustainability@pttplc.com



*His Majesty the late King Bhumibol Adulyadej
was such a formidable force and inspiration for PTT Group's business.
Recognizing our responsibility to enhance energy stability
and security for Thailand's sustainability,
we pledge to do our best to maintain his resolve.*

*PTT Group has humbly applied H.M. the late King Bhumibol Adulyadej's Sufficiency Economy philosophy to all its tasks.
Our focus is on suitable investment, relentless pursuit of emerging business opportunities, development of immunity for security
filled with good governance, transparency, and fairness while creating value for communities and society and showing earnest responsibility.*

About this Report

PTT Public Company Limited (PTT) has published its 9th annual corporate sustainability report disclosing the company's performance on economic, social, and environmental material issues, determined from sustainability trends in society, business risks and opportunities, and stakeholders' expectations.

Reporting Approach

The 2016 Corporate Sustainability Report was prepared in accordance with the Global Reporting Initiative G4 Guidelines, "In Accordance – Core" Option, the Oil and Gas Sector Disclosures (OGSD), and further outlines PTT's progress in implementing the 10 Principles of the United Nations Global Compact (UNGC). In addition, PTT had considered the Integrated Reporting <IR> Approach to demonstrate how the organization creates value from sustainability through various capitals. Finally, the report demonstrates PTT's performance in alignment with the United Nations' Sustainable Development Goals (SDGs), covering performance over the period from 1st January to 31st December 2016. To ensure the completeness, accuracy, and reliability of the information disclosed herein, PTT has engaged an independent assurer to verify selected economic, health & safety and environmental indicators for 6 consecutive years.

Reporting Scope

The scope of this report covers PTT-operated businesses, consisting of the Natural Gas Business Unit, Oil Business Unit, International Trading Business Unit, and Infrastructure and Sustainability Management Business Unit. The report's scope also includes PTT Flagship companies: PTT Exploration and Production Public Company Limited (PTTEP), PTT Global Chemical Public Company Limited (PTTGC), Thaioil Public Company Limited (TOP), IRPC Public Company Limited (IRPC), and Global Power Synergy Public Company Limited (GPSC), unless otherwise stated.

In addition to the annual sustainability report, stakeholders may visit PTT's website, www.pttplc.com, for more information on the company's performance.



Materiality Assessment



2. Reporting Boundary

Factors used in scoping the boundary of each material issue include impact to PTT's business (e.g., PTT Group companies, Joint Ventures) and impact to stakeholders (e.g., suppliers, contractors).



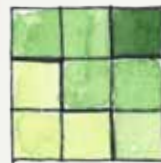
4. Verification

Information disclosed in this sustainability report must be approved by the PTT Group Sustainability Alignment Committee (SAC), which takes responsibility in monitoring and verifying the report development process, providing recommendations to ensure completeness and accuracy of the report and coverage of material issues relevant to the organization and stakeholders, as well as engaging an independent party to conduct report verification.



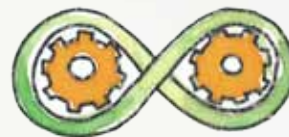
1. Identification

Functions responsible for relevant sustainability aspects are responsible for identifying material issues by considering strategic business direction, corporate sustainability management, risks and opportunities, stakeholder expectations derived from stakeholder engagements, and global sustainability trends affecting the oil and gas industry.



3. Prioritization

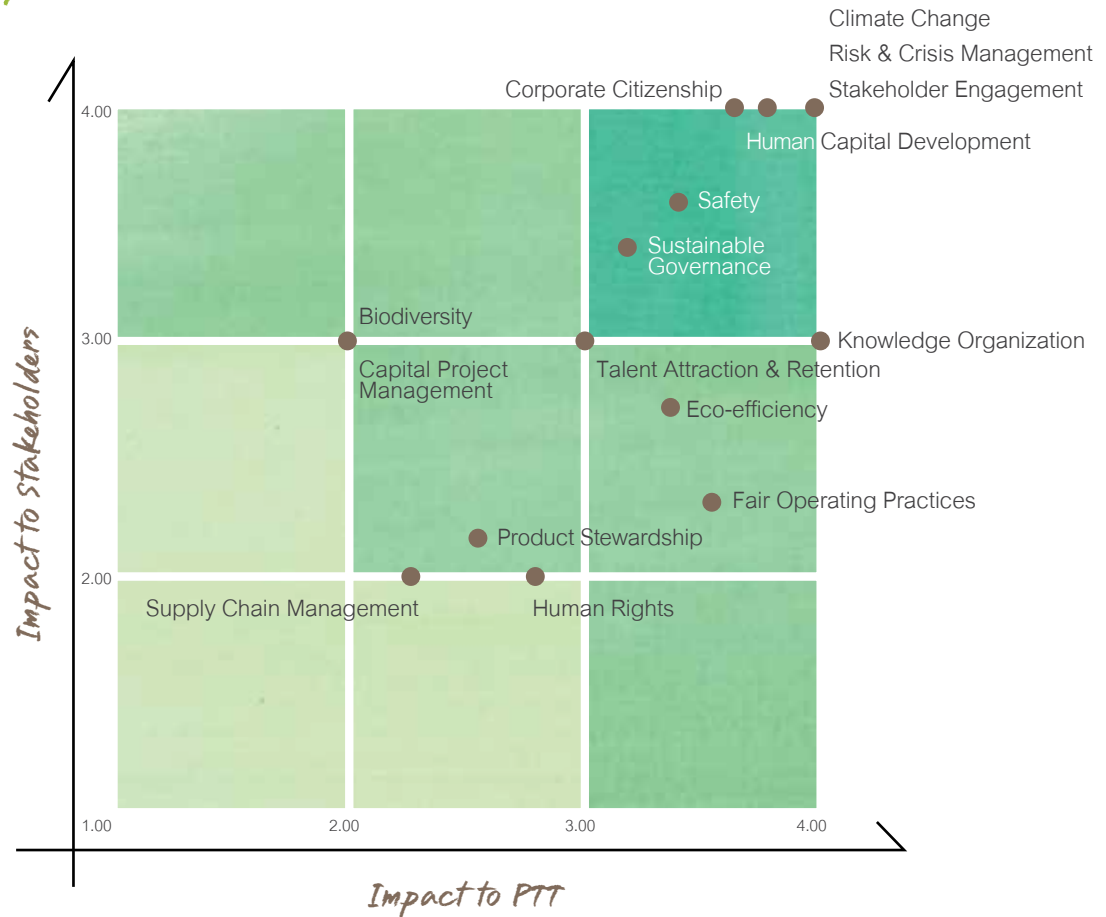
Selected material issues are prioritized based on two dimensions: opportunity and impact to business, and interest and impact to stakeholders. This sustainability report presents contents of high and medium material issues.



5. Continuous Improvement

PTT integrates reader feedback from both internal and external channels in order to continuously improve its report quality, through means such as external reporting assurance, online stakeholder surveys and feedback forms, and participation in the annual corporate sustainability report award organized by the Securities and Exchange Commission Thailand and the Thaipat Institute.

Materiality Assessment Matrix



Reporting Scope from Materiality Assessment

Chapter	Material Aspect	Impact Boundary						
		Internal Impact		External Impact				
				Country	Shareholders	Customers	Society	Partners
Business Strategy	Risk & Crisis Management	●	●	●	●	●	●	●
Corporate Governance	Fair Operating Practices	●	●	●	●	●	●	●
	Human Rights	●	●	●	●	●	●	●
Sustainability at PTT	Sustainable Governance	●	●	●	●	●	●	●
Stakeholder Engagement	Stakeholder Engagement	●	●	●	●	●	●	●
Value Chain	Supply Chain Management	●	●			●	●	●
	Product Stewardship	●	●			●	●	●
Operational Excellence	Climate Change	●	●	●		●	●	●
	Eco-efficiency	●	●	●		●	●	●
	Safety	●	●			●	●	●
	Capital Project Management	●	●	●			●	
	Biodiversity	●	●				●	
People	Human Capital Development	●	●					
	Talent Attraction & Retention	●						
	Knowledge Organization	●	●					
Corporate Citizenship	Corporate Citizenship	●		●			●	

CEO Statement



Tevin Vongvanich

President and Chief Executive Officer

In recognition of His Majesty the late King Bhumibol Adulyadej, Rama 9, whose kingly virtues have graciously gifted the Thai people with over 70 years of peace and happiness under his reign, PTT, with profound sorrow at his passing, is determined to further his teachings and continue in His Majesty's footsteps for the benefit of all.

In the past, PTT has had the privilege and opportunity to follow His Majesty's vital teachings in many important areas. For instance, PTT has worked in collaboration with His Majesty's Royal Chitralada Projects since 2001 on the education, research, and development of alternative energy – producing gasohol and biodiesel for commercial use. Such a partnership allowed the country to reduce its oil imports, and has since determined the path for Thailand's renewable energy policy up to present day. The Reforestation Project in Honor of His Majesty the King's 50th Year of Ascension to the Throne, was initiated in 2002 to restore forests based on His Majesty's teachings on the importance of co-existence between people and the forest. From an initial forest area of 1,600 million m² in Pranburi District, Prachuap Khiri Khan Province, the project has since been developed into the Sirinart Rajini Ecosystem Learning Center and is continuously monitored today. In 2014, the Vetiver Development and Conservation Project was established to support the growth and research of vetiver for soil and water conservation, demonstrate its success, and showcase vetiver products. Finally, the Water, Forest, and Bang Kachao River Bend Conservation Project in Phra Pradaeng District, Samut Prakan Province, in cooperation with Chai Pattana Foundation, focused on restoring the last remaining green space in the Bangkok Metropolitan Area. It further emphasized the preservation of local communities as models of community-based sustainable development, in accordance with His Majesty's teachings. The project is now undergoing its first implementation phase (2016-2018). It is evident that the implementation of these projects, as well as His Majesty's Royal Projects over the past several decades, all support the achievement of the United Nations Sustainable Development Goals in 2015. This not only attests to his brilliance as a visionary, but also reveals the overwhelming care that he demonstrated for the development of his people.

His Majesty's Sufficiency Economy Philosophy has also been applied as a mindset in conducting sustainable business at PTT. Our organization remains conscious of **moderation** in managing our resources, people, and technology; **reasonableness** in formulating strategies and undertaking sound decisions; managing risks to create **social immunity**, and applying **knowledge and virtue** as our guide. These principles are communicated to PTT employees through the SPIRIT Values, which



not only enables PTT to overcome the obstacles we face but strengthens the organization as a whole. Although the previous year bore witness to economic challenges and volatile oil prices, the shared commitment of PTT employees in increasing production capacity, improving efficiency, reducing costs, increasing revenue, and collaborating to distribute business risks across the value chain from upstream to downstream, allowed us to recover from any setbacks faster than anticipated.

Furthermore, in support of national energy security, the government's policy on energy and environmental development, and the United Nations' Sustainable Development Goals, PTT has continued to invest in critical infrastructure. This involved, namely, the expansion of the LNG Receiving Terminal and construction of the Onshore Gas Transmission Pipeline No.5 to expand the natural gas pipeline network and respond to the increasing use and import of natural gas, in consideration of decreasing natural gas reserves in the Gulf of Thailand. This approach will pave the way towards economic growth, significant revenue generation, and further supports universal access to electricity, given that natural gas, as a clean fuel source, is presently used for 70% of electricity generation in Thailand. Moreover, PTT supports the government's policy of open concessions to promote competition in LPG, NGV, and LNG business activities by managing its natural gas pipelines and petroleum terminals under the governance of the Energy Regulatory Commission, or Third Party Access (TPA). At the same time, PTT has examined investments in new technologies and activities to prepare for future changes, including activities in the electricity supply chain, electric vehicles, bio economy, among others.

In terms of environmental management, PTT is firmly dedicated to responding to global efforts in combatting climate change. We are currently formulating a new target and long-term strategy, to be completed by 2017, in order to align our efforts with Thailand's climate change policy. As testament to our efforts, in 2016 PTT Group successfully met its strategic target to reduce greenhouse gas emissions intensity by 5% compared to the 2012 baseline – before the designated 2020 timeframe.

In addition, PTT participated as a representative of Thailand during the 22nd Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) in Marrakesh, Kingdom of Morocco, where we showcased our performance and progress in collaborating to resolve climate change-related issues. The COP also presented an opportunity to seek international partnership networks to continue driving and strengthening performance on climate change.

PTT remains steadfast in conducting its business with honesty, transparency, and integrity. Over the past year, PTT added an additional requirement on insider trading, money laundering, and gift-giving into the Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook. The stipulation on insider trading in particular, is intended to prevent the sales or purchase of PTT Group shares by PTT Board Members, management, and related parties. Large investment projects, such as the Onshore Gas Transmission Pipeline No.6 (Ratchaburi Gas Controlling Station – Wang Noi), was chosen for participation in the Integrity Pact, a collaboration project which aims to protect against corruption in state procurement practices. The Pact is an agreement between governmental agencies and bidders requiring them to observe honest practices, reject all forms of bribery and benefits, disclose critical information in a transparent manner, and allow external witnesses to observe and investigate the procurement process from start to completion. PTT will not compromise on corruption at all costs, and will collaborate with all relevant agencies during investigations.

I would like to take this opportunity to thank all of our stakeholders for their endless support. I am confident that PTT's continued progress in line with the principles of sustainable development and the Sufficiency Economy Philosophy will enable us to achieve our sustainability targets at both the national and international levels. Similarly, doing so will support us in our sustainable growth as we continue to fulfil our mission of national energy security alongside social and environmental responsibility – for a vision of PTT as the Pride and Treasure of the Thai people.

PTT Business

PTT Public Company Limited, or PTT, is the national energy company, comprehensively operating upstream through downstream energy and petrochemical businesses. The businesses under PTT's governance are consisting of Natural Gas Business Unit, Oil Business Unit, International Trading Business Unit, and Infrastructure and Sustainability Business Unit. The businesses in which PTT invests through PTT Group companies comprise petroleum exploration and production, electricity, coal, petrochemical and refinery. PTT is a listed company registered in the Stock Exchange of Thailand (SET), as well as a state-owned enterprise under the supervision of the Ministry of Energy, while the Ministry of Finance is a major shareholder. PTT operates the businesses under the mission to create energy security along with attaining the balanced relationship with stakeholders and supporting sustainability for Thai society.



Upstream Petroleum and Gas Business Group

Petroleum Exploration and Production Business

Operate petroleum exploration and production on both crude oil and natural gas within Thailand and overseas, to create national energy security and mainly trade petroleum products within the domestic market.

Natural Gas Business

Supply and distribute natural gas, retails products from natural gas separation plant, and invest in the beneficial and value-added businesses via PTT Group companies.

Coal Business

Operate coal mines and coal-related businesses in order to distribute within the nation and overseas, as a way of building the energy security by exploring new energy sources.





Infrastructure and Sustainability
Management Business Group



Infrastructure and Sustainability Management Business Group

Manage transportation of natural gas through gas transmission pipelines, NGV distribution for vehicles, electric and co-generation power, land development, standardization services and operational systems for sustainability, engineering and maintenance services, and property management to maximize efficiency of PTT's infrastructure assets.



Downstream Petroleum Business Group

Oil Business

Market high quality petroleum products with reasonable price, covering retail, wholesale, and trading market as well as managing domestic and international investments in oil and gas related businesses and services through PTT Group companies.

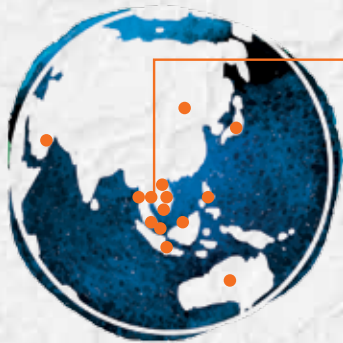
International Trading Business

Operate a fully integrated international trade business under a strategic framework to enhance energy security of Thailand along with the expansion of trading bases to all regions throughout the world.

Petrochemical and Refinery Businesses

Operate the business covering fuel oil production, production and distribution of upstream and midstream petrochemical products, and various types of plastic pellets.

Asia and Australia



PTT Headquarter
located in
Bangkok

Australia	Japan	The Philippines
Brunei	Laos	United Arab Emirates
Cambodia	Malaysia	Vietnam
China	Myanmar	
Indonesia	Singapore	

Africa and Europe



Algeria	Iran
Egypt	Madagascar
France	Mozambique
Germany	United Kingdom

North America



Canada United States of America

South America



Brazil

Manage business investments in
24 countries throughout
the world

Total of **29,303**
PTT Group employees.

PTT advances towards the next stage of capacity development and competitiveness at the global stage through business expansion and operations both domestically and internationally, under the commitment of economic and social developments in all areas with no limitation on nations and nationalities. PTT has set business strategy to align with the culture and social contexts in which we operate, especially ASEAN countries where PTT has expanded its energy infrastructures, including oil and non-oil related businesses in Laos, Cambodia, Myanmar, Vietnam and the Philippines. These activities improve the quality of life by creating jobs, fair employments, and quality in products delivery and services. Moreover, PTT is determined to continuously create business opportunities at the international level with the aim of becoming the Thai Premier Multinational Energy Company.



PTT Group Performance Highlights

Corporate Sustainability Assessment

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



PTT and PTT Group were selected as members of the Dow Jones Sustainability Indices (DJSI). PTT has been listed in the indices for 5th consecutive year.

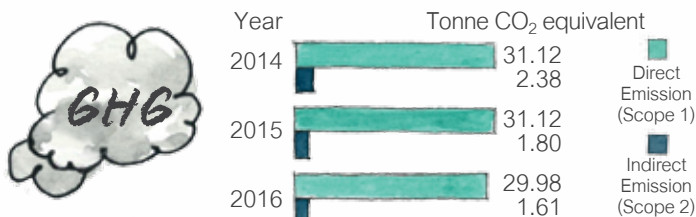
Value Chain



Value creation totaling
46.5 million baht

from the collaboration of business partners
in the Refinery group under the scope of
the PRISM Project

Greenhouse Gas Emissions¹



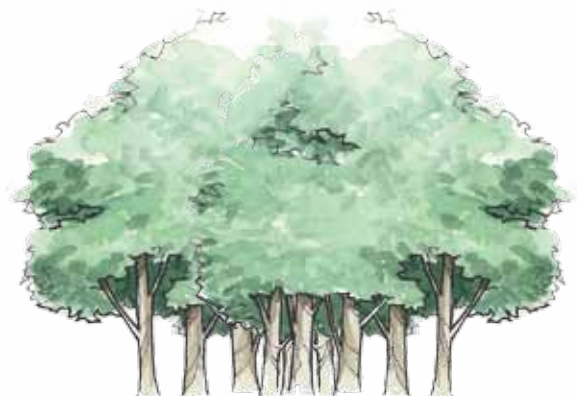
Methane Emissions (Leakage, Venting, and Flaring)¹



Carbon Absorption of

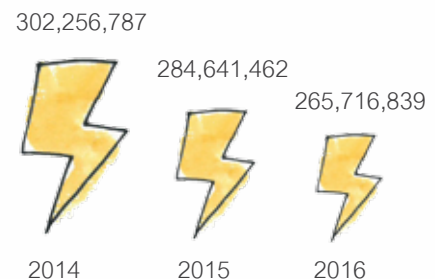
**1.93 million tonnes per year from
1,932 million m² forest area**

planted in honor of the 50th anniversary of His Majesty
the King Bhumibol Adulyadej's ascension to the throne



Total Energy Consumption^{1, 2}

Gigajoule



Remark:

¹ The scope of data covers companies in Thailand in which PTT hold direct shares more than 20% and hold indirect shares for 100%.

² Restatement of energy consumption data in 2014-2015 for PTTGC

Business Strategy

"Since energy industry is a business with high fluctuation of both supply and demand, PTT must amend business strategy to align with the changing circumstances as well as effectively managing risks in order to stand in the midst of recession and rapid economic recovery and to build trust for all stakeholders."



PTT realizes the role and responsibility as the national energy company to fulfil the national policy and international sustainable development goals. The business strategy has been developed to continue on the mission of ensuring energy security, to drive national economy for sustainable growth, and to become the Pride and Treasure of Thailand. The performances of 2016 are as follows:

Pride with Inclusiveness

As a state-owned enterprise in which Thai people trust and are proud of, PTT operates with the responsibilities and the ability to generate revenues, leading to national development for the well-being of the society. PTT also prioritizes in taking care of communities and preserving the environment through operations with standards, safety, and environmental conservation and restoration projects.

Creating the National Energy Security

- Planning for the sourcing of Liquid Natural Gas (LNG) to gradually replace natural gas through maintaining the supply of natural gas from various sources, while negotiating for more LNG sourcing. The first import of LNG was in the middle of 2010, which was a short-term contract. Since 2015, the import of LNG was a long-term contract with Qatar.
- Increasing efficiency of current operations through productivity improvement programs for all business units and PTT Group companies. In 2016, PTT Group has developed a strategy and a suitable strategic corporate plan for scenario planning due to the uncertainty of oil price and the overproduction.

Building the Trust

- Analyzing the impacts and expectations of stakeholders and inclusiveness which has been integrated into investment management, enterprise risk management, and operational excellence.

- Appointing stakeholder management function to manage sustainability issues which are related to PTT Group's business and operations.

Operating according to RIT

- Creating values for society through job creation and continuous supports for community businesses such as the collaboration with the Royal Project on the development and supporting of farming coffee beans and buying them as a raw material for Café Amazon, one of PTT's businesses. In addition, PTT encourages the voluntarism among its employees to give back to society through "Thai Volunteer Force" Club.
- Continuously developing and improving corporate governance policy and anti-corruption. In the past year, no gifts policy has been officially announced. Moreover, PTT builds transparency working culture through various activities and encourages employees to become "I (Integrity) Ambassador" through activities of "Integrity Power" Club.
- Building trust for stakeholders to PTT brand through quality in delivery and services which are environmentally friendly and build close relationship with customers, under the strategy of PTT Life Station, which has been awarded from BrandAge – Thailand's Most Admired Brand 2016, along with Thai Brand Award, for being the leader of Thai brand for more than a decade.

Treasure for Sustainability

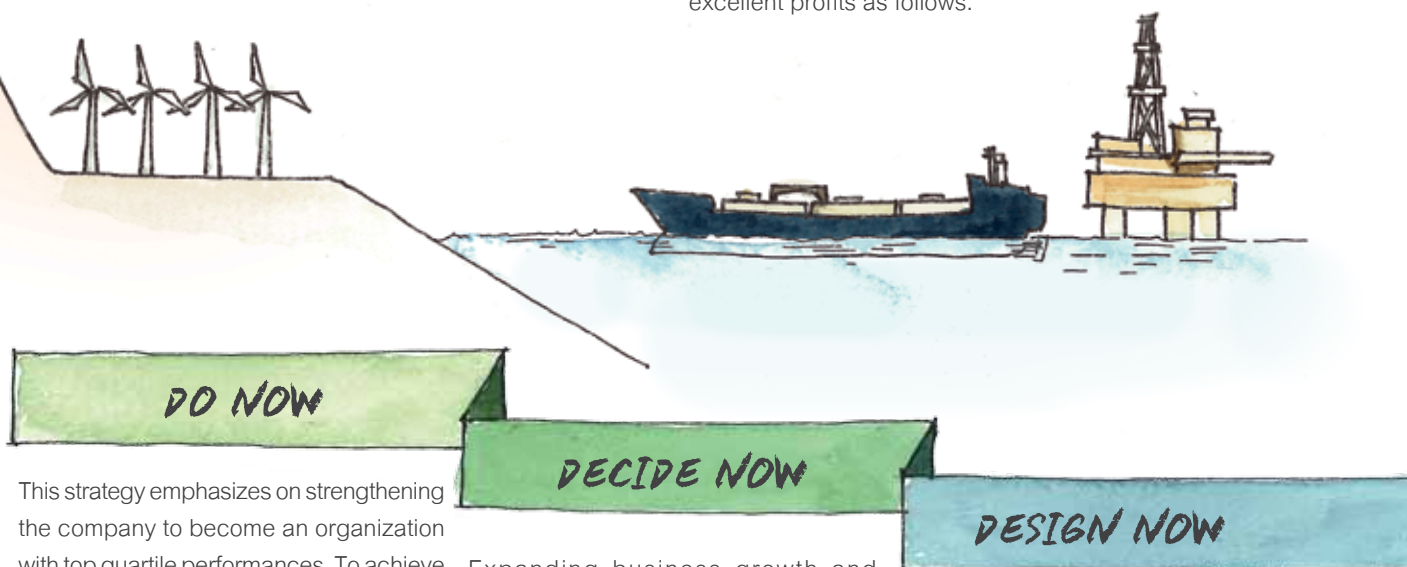
As a listed company in the Stock Exchange of Thailand, PTT is able to operate with good governance, efficiency, good business profits and sustainable growth.

- Continuously improving the business by integrating renowned sustainability practices, including taking into consideration the Sustainable Development Goals
- Developing businesses and products within PTT Group to support low-carbon society by setting technology and innovation development plan under the New S-Curve strategy. This strategy aims to develop technology and innovation products which are environmentally friendly and create social values
- Engaging with climate change policy, considering carbon pricing for investment decisions, increasing energy efficiency, reducing greenhouse gas emission to meet

Thailand Voluntary Emission Reduction Program (T-VER) goals, and publicly disclosing information on climate change management. In 2016, PTT met the 5% of the strategic target in greenhouse gas intensity reduction within 2020, comparing to the base year 2012

- Participating in the corporate sustainability assessment of the Dow Jones Sustainability Indices (DJSI). The overall score improved from 2015.

Annually, PTT conducts an analysis of internal and external conditions, including the study of global economic, social and environmental trends, energy industry trends, and directions of national development plan, to support the direction of PTT Group's strategy planning. In 2017, PTT clarifies PTT 3D Strategy to strive for sustainability and excellent profits as follows:



This strategy emphasizes on strengthening the company to become an organization with top quartile performances. To achieve the goal, PTT focuses on increasing efficiency of operations through productivity improvement programs and business structures. This involves creating mutual understanding at social, communal and national levels to PTT's businesses which operate with good governance and mutually create values between the business and society.

Expanding business growth and managing PTT Group investments for sustainability business under the ROIC Principle consist of the following:

- Rationalization – reasonable investment, focusing on the core competitive business
- Optimization – increasing efficiency to reduce the costs throughout the supply chain
- Integration – extending business opportunities to manage risks, secure the business and create added-values throughout the supply chain
- Consolidation – merging businesses to reduce the complexity and create the competitiveness

The new S-Curve strategy prepares for advancing growth in the future through seeking business opportunities and new business models to align with global megatrends and energy delivery of the future. This strategy also focuses on client centric. A specific function has been assigned to work on ExpressSo (Express Solution) project as the analysis center, screening and selecting new business, product, and service ideas for rapid prototypes before going commercialization.

"It is essential for PTT to accelerate its investment in renewable energy, especially solar energy, and affordable energy storage technology"

Mr. Piyasvasti Amranand
Chairman



"As a state-owned enterprise, PTT should enhance its business growth and, at the same time, maintain national energy security"

Mr. Chanvit Amatamatucharti
Chairman of the Enterprise Risk Management Committee



Risk and Crisis Management

PTT realizes how effective risk and crisis management reflects PTT's ability to operate as the national energy company responsible for creating highest values for all stakeholders, while securing trust from them. Hence, PTT designs the risk management process to link with strategy planning process, taking into consideration the uncertainty of internal and external factors with potential impacts to the business and corporate goals. The potential impacts are political uncertainty, fluctuation of the supply and demand in petroleum and petrochemical industries, stakeholders' expectations, changes in regulations and laws, advancement of technology, and environmental impacts from business operations. With these considerations, PTT effectively manages risks depending on the severity level of each risk, including existing risks, emerging risks, and black swan event - occurrences of low likelihood but high impacts.

In addition, PTT employs various risk management tools for comprehensive risk assessment and risk monitoring such as risk interconnection map, mitigation plan, and key risk indicator. Furthermore, PTT assesses risks through stress test

scenario in order to prepare and seek for risk management methods and opportunities such as for climate change and water supply risks.

PTT continuously develops risk management system in accordance with ISO 31000 Risk Management and COSO ERM Framework. Evaluation of risk is conducted annually for any potential impacts to corporate targets within 5 years through risk reporting and risk mitigation plan. Business Continuity Management System (BCMS) has been developed to mitigate operational risks such as business interruption—a risk of low likelihood with high impacts, referring to ISO 22301: 2012 (Business Continuity Management Standard) and other relevant standards. Risk management has been communicated internally for the standardized practices across the company. Monitoring and reporting of risks are conducted presented to the Corporate Plan and Risk Management Committee (CPRC), the Risk Management Committee, the Audit Committee, and the Board of Directors for reviews and suggestions for continuous improvement. Thus, PTT is able to respond to all corporate risks in timely manner.

Risk Culture

Cooperation of all employees is a key to effective organizational risk management and system. Therefore, an awareness program on risk management and business continuity management system has been implemented. The program consists of selecting employees with knowledge of risk management, building risk culture for all level of employees about their roles and responsibilities, and encouraging relevant employees to participate in the risk management plan. Also, key performance indicators of executive management are set to measure the efficiency and effectiveness of performances.

In readiness of crisis response, PTT has established business continuity management coordinator in each department to communicate critical information, including good practices, emergency phone numbers, temporary working sites, and yearly significant changes. Moreover, Emergency & Business Continuity Management Web Portal is used as a communicating channel on risk-related facts, emergency and crisis management, business continuity management, and internal and external factors for employees to build on knowledge capability. This channel also opens to public access serving as a knowledge database.



International Standard of BCM

PTT realizes the importance of developing the linkage of business continuity management system in all business units throughout the value chain, as well as ensuring that the system is in compliance with the international standards for preparedness of any potentials impacts that can disrupt business operation. Therefore, the PTT Management Committee has approved the development and improvement of PTT's business continuity management, which was successfully certified by ISO 22301: 2012 in 2016. This achievement was another step of success and pride for PTT as a resilient organization, strengthening stakeholders' trust and fulfilled PTT's mission to ensure Thailand's energy security.

Sustainability at PTT

Sustainable Governance

PTT manages sustainability across PTT Group through the governance of PTT Group Sustainability Alignment Committee (SAC), consisting of the senior executive vice president and executives from PTT's business units and PTT Group companies. The SAC is responsible for setting out PTT Group Sustainability Management Policy and Framework, as well as monitoring the effectiveness of sustainable implementation.



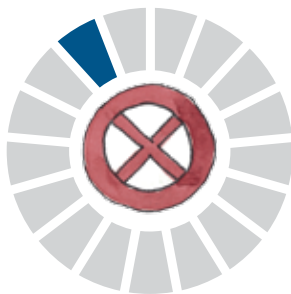
PTT's Sustainable Context

Sustainability management is a priority interest for all sectors worldwide. All parties involved, including Thailand, are demonstrating their stances to eradicate poverty, establish peaceful society with equality, distributing resources thoroughly, and conserving the environment through adopting the Sustainable Development Goals (SDGs). As a state enterprise and a national energy company, PTT is committed to drive Thailand's sustainable development by joining local and international sustainable networks such as the United Nations Global Compact (UNGC), World Business Council for Sustainable Development (WBCSD), and Research & Development Institute of Sufficiency Economy Philosophy Foundation to exchange knowledge, drive sustainability concept into action on the basis of inclusive business. PTT's ultimate goal is to create positive impacts on communities and the environment, while achieving the SDGs.

Sustainability Strategy

In 2016, the SAC ran a workshop within PTT Group to analyze and prioritize relevant sustainable issues for PTT Group's business in order to develop actionable strategies at the local and international levels to meet the targeted SDGs. The 4 selected sustainable issues based on the scope of PTT and its flagship companies' businesses are anti-bribery & corruption, creating value to natural capital & society, climate change risks & opportunities, and environmental & social innovation. These issues can be mapped to 9 relevant SDGs and are in accordance to PTT's strategy 'Pride and Treasure of Thailand' regarding inclusive business, transparency, and environmental and social innovations. In order to establish an intrinsic sustainable foundation for PTT Group's businesses, the SAC is currently preparing a strategic plan aligning to the 4 selected sustainable issues and arranging sustainable strategy deployment to PTT's business strategy.

Mapping SDGs to PTT Group's Selected Sustainable Issues



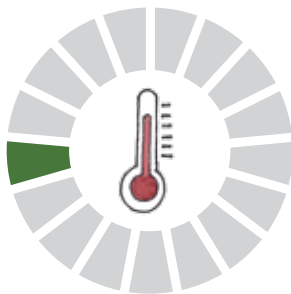
Anti-bribery & Corruption

Target: 16



Creating Value to Natural Capital & Society

Target: 3, 4, 7, 8, 9, 12, 15, 16



Climate Change Risks & Opportunities

Target: 13



Environmental & Social Innovation

Target: 8, 9

PTT's Sustainable Governance

PTT Group Sustainability Management Policy and Framework ensure PTT's sustainable governance throughout the group. In 2016, the SAC approved the revision of PTT Group Sustainability Management (SM) Framework. The new document is up-to-date, aligning to the rapid adjustment of the international sustainable guidelines and PTT Group's procedures for Operational Excellence Management System (OEMS). During the revision process, relevant responsible units or subject matter experts (SMEs) were engaged for recommendations to make the Framework more appropriate for implementation. The Chief Executive Officer & President has announced the adoption of SM Framework Revision 3 in February, 2017.

PTT Group Sustainability Management Framework



PTT Group Sustainability Management Policy

PTT Group has revised the Sustainability Management Policy by integrating the concept of the Sufficiency Economy Philosophy to the organization's SM Framework. In addition, the Policy outlines the commitment of PTT Group to be legally compliant in all operational sites, to improve community's life quality through energy expertise, to raise awareness on sustainability management across the supply chain including business partners, suppliers, and customers, contributing to the overall sustainability of all stakeholders.



Human Rights

PTT Group prioritizes human rights management and incorporates this issue as one of the main elements of sustainability management in accordance to the principles of the United Nations Global Compact. Since 2015, PTT has started a Human Rights Due Diligence process on PTT Group's worldwide businesses, consisting of human rights risk analysis & assessment, risk management, progress monitoring, performance reporting, and continuous improvement.

In 2016, PTT has reassessed PTT Group's human rights related risks from 65 operational sites in 23 countries worldwide. There are 21 operational sites with high risks to be followed up. The main risks are forced labor, unsafe working conditions, health impacts, and community rights surrounding the operational sites. As a result, the SAC agrees to reform PTT Group Human Rights Guideline to Human Rights Management System, covering human rights risks from PTT's 6 stakeholder groups such as labor rights, community rights, supply chain management, security, safety & environment, and customer & consumer rights. In addition, the department of PTT Group Sustainability Management Project was assigned a responsible unit to operate the Human Rights Management System with relevant functions at corporate level and in PTT Group companies. The progress report is presented to the SAC regularly every quarter.

Deployment

PTT Group Sustainability Management Policy and Framework are deployed in common alignment throughout PTT Group under the scope of the PTT Way of Conduct. In addition, since 2014, PTT Group communities have been sharing knowledge through the PTT Group Knowledge Management Portal or BRIGHT system with the total of 25 sustainability practices recorded on the intranet system. Moreover, sustainable good practices are shared during internal seminars to foster concrete implementation of sustainability in the same direction throughout PTT Group.

Sustainable Forum “Sufficiency Thinking: Challenges & Opportunities for Sustainable Business”

PTT has been honored by 3 distinguished guests: Dr. Chaiyawat Wibulswasdi, Chairman of the Stock Exchange of Thailand, Ms. Jinangoon Rojananan, Senior Advisor in Policy and Plan, the National Economic and Social Development Board, and Mr. Chavalit Punthong, Chief Operating Officer, PTT's Infrastructure and Sustainability Management Business Group. The discussion topics included corporate sustainability management, effects of the government's sustainable development targets from Thailand's 20-year National Strategy on the business sector, 12th National Economic and Social Development Plan (2016 - 2021), and the adoption of the Sufficiency Economy Philosophy from PTT's context. The program was facilitated by Dr. Sirikul Laukaikul, Country Director Sustainable Brands, Thailand.



On an annual basis, PTT's relevant internal departments and PTT Group companies under the scope of the PTT Way of Conduct are required to carry out a self-assessment against the SM Framework in order to set the annual sustainability strategy and management plan. The assessment results and strategies are reported to the executives, while the SAC is responsible for following up on the progress every quarter. Moreover, external assessment within a given timeframe is a requirement to evaluate the conformance against the SM Framework.

In 2016, a total of 26 PTT Group companies out of 27 companies under the scope of PTT Way of Conduct, accounting for 96%, were in compliance with PTT Group sustainability management guideline – submitting the annual self-assessment, the management plan, and the progress

report on a quarterly basis. The PTT Group Sustainability Management Project has compiled and reported the results to the SAC every quarter. The assessment results showed findings that human rights management was not handled in a standardized approach throughout PTT Group. Therefore, the human rights management system was developed as a common guideline for all PTT Group companies.

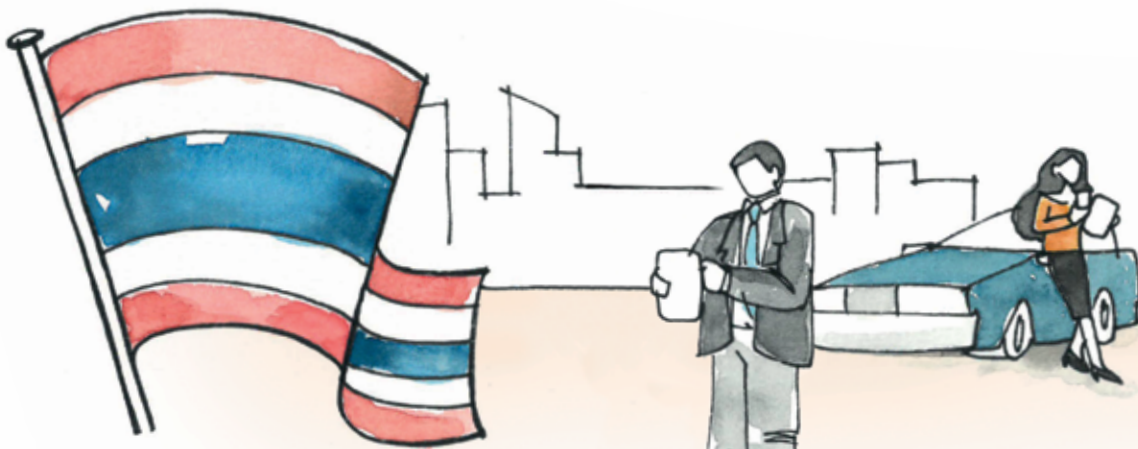
PTT's continuous enforcement of sustainability management throughout PTT Group resulted in PTT being listed for the 5th year as a member of the Dow Jones Sustainability World Index (DJSI World) and Dow Jones Sustainability Emerging Markets Index (DJSI Emerging Markets) in the Oil & Gas Upstream & Integrated (OGX) Sector. PTT was also classified in the Silver Class in the RobecoSAM Sustainability Yearbook 2017.

Stakeholder Engagement

PTT engages with all stakeholder groups through proactive stakeholder management process in all operational levels. In order to meet the expectations of all stakeholders, stakeholders' needs are analyzed thoroughly and are considered throughout effective business strategy planning.

Management Approach

PTT analyzes all stakeholders involved with the organization and classifies them into 6 groups: country, community and society, shareholders, customers, partners, and employees. Stakeholders at all levels are thoroughly and equally engaged



Country

- ▲ Meetings between PTT' executives and the Ministry of Energy
- ▲ Consultations with the government agencies
- ▲ Partnering with private sectors (Thai Chamber of Commerce, Federation of Thai Industries, Public-Private Collaboration Committee)
- Transparency and environmentally & socially responsible in all operational sites; set fair energy prices; communicate facts and responding to issues with high public interest clearly and rapidly
- Demonstrating transparent energy procurement and distributing process in accordance with international standard by
 - assigning a unit responsible for preparing information used for clarifying issues related to PTT business in a clear and timely manner
 - providing information on PTT's operation to the government agencies on a regular basis

Shareholders

- ▲ Annual General Meeting (AGM) for shareholders
- ▲ PTT and PTT Group business site visits for common shareholders
- ▲ Feedback channels including telephone number and email address for shareholders
- Energy technology development, including renewable energy support; socially responsible operation, while maintaining continual investment return
- Adjusting investment strategies in various businesses for new business opportunities such as reviewing portfolio in petrochemical business, business expansion from the oil business (Café Amazon business, Jiffy convenient store, etc.) to ensure investment return even during the oil price crisis

Investing in renewable energy technology development through subsidiary company and supporting PTT Research & Technology Institute in developing charging stations for the increase of electric vehicles

Customers

- ▲ Customer satisfaction survey
- ▲ Complaints/Feedbacks through PTT Call Center 1365, website, and social media
- ▲ Sales promotion
- ▲ After-sales service
- Developing environmentally & socially friendly product/service innovation of high quality; distributing product/service thoroughly and sufficiently across the country with fair price
- Assigning the customer relations unit to gather customer feedbacks and report to PTT Customer Excellence Committee (PTTCEC) monthly for the management of problem-solving, knowledge sharing among functions, partners, distributors & dealers, and customer-centric product/service value-added design

Assigning the marketing unit to manage complaints on product/service and immediately inform the progress to the customers

through effective engagement activities and communication channels in order for PTT to understand their expectations and interests. Other than this, PTT has cooperated with an external agency to arrange a corporate reputation survey, studying stakeholders' expectations and satisfaction toward PTT's performance. In 2016, the survey results show a higher reputation score compared to the previous year. Moreover, all stakeholder groups are confident that PTT is financially stable and expect PTT to operate with transparency and openly disclose information to the stakeholders.

Hence, the survey results are part of the input supporting the Management's decision-making process to set the organizational mission and review sustainable development strategies to meet the expectations of all stakeholders. For instance, impacts to stakeholders from project operation are evaluated and presented to PTT's Management Committee for the approval of appropriate operational practice and performance monitoring. Regular progress reports are then reported to PTT's Management Committee.



Partners

- ▲ Supplier Relationship Management Seminar
- ▲ Supplier satisfaction survey to PTT's procurement functions

● Partnering in building secured national economy and leading in the energy business under good governance operation, innovation development and effective procurement process

■ Improving procurement working process based on partners' recommendations such as allowing flexible all-year application for supplier registers, encouraging green procurement for sustainable material sourcing, and providing supplier guidebook for PTT's procurement procedures

Communities and Society

- ▲ Community relations through social programs
- ▲ Meetings/Seminars/Focus groups with the local communities

● Thailand's energy security and self-sufficiency in energy; conduct business with good governance, integrity, and responsibility for the communities and the environment in all operational sites

■ Considering community and society's expectations during the planning of sustainable development strategy to determine appropriate stakeholder involvement in the social programs in accordance to PTT Group Community Development & Community Relations: CD-CR Guidebook

Employees

- ▲ Employee engagement survey
- ▲ Employee union meetings
- Developing employee capacity building and effective working system

■ Analyzing the annual result of employee engagement survey and commitment to PTT's core value and working with employees in the Improvement Employee Engagement & SPIRIT Workshop to plan HR action plans, which are then monitored in the HR Business Group Meetings

Corporate Governance



“PTT is determined to be the premier Thai multi-national energy company – the pride of the Thai people – by striving for sustainable growth, maintaining efficient management systems, strong adherence to the principles of good governance, transparency, and accountability, and balancing the expectations of all stakeholder groups.”

PTT maintains a role as both a state-owned enterprise, with the responsibility to provide national energy security, as well as a listed company in the Stock Exchange of Thailand, with the objective to deliver benefits and added value to shareholders. Such a role signifies that PTT has an important responsibility in creating confidence for all stakeholders in a balanced manner. This is achieved through business conduct that adheres to fundamental ethical principles, honesty and transparency in business operations, and the commitment to combat all forms of corruption under the strategy, Pride and Treasure of Thailand. The strategy supports PTT in achieving organizational acceptance as a national energy company, and in becoming the pride of the Thai people by attaining sustainable growth upon the basis of society's trust and reliance.

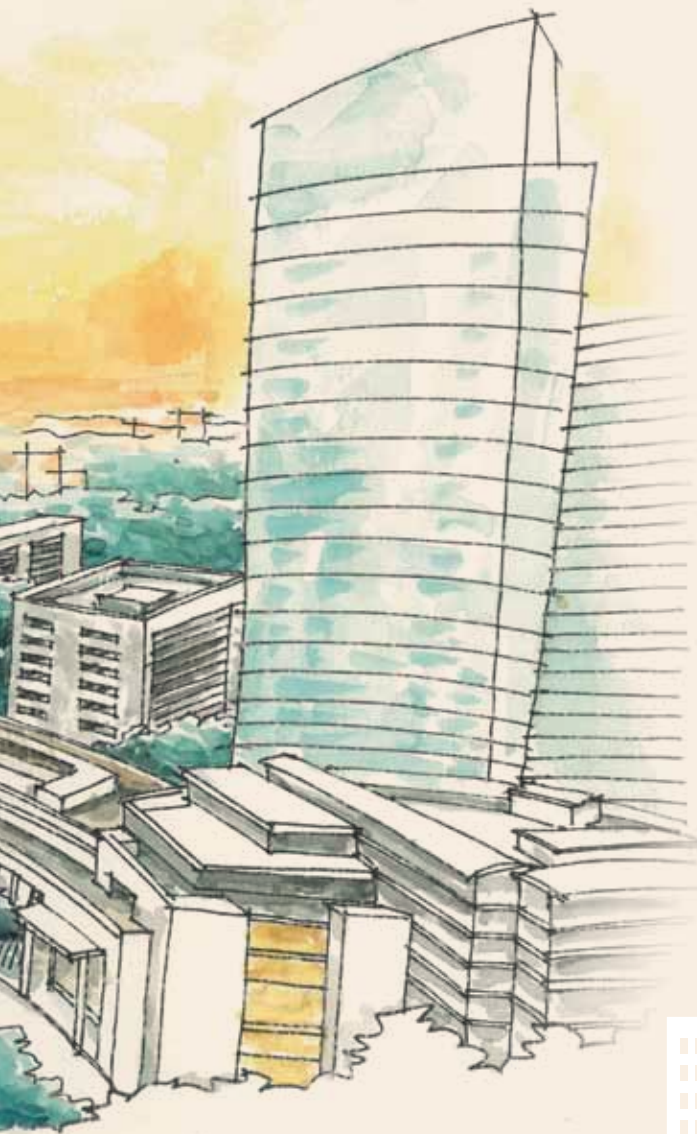
Instilling a Culture of Fair Practice

PTT instills a sense of ethics, integrity, and honesty for all employees to serve as the foundation for their conduct, by developing systems, mechanisms, good governance and anti-corruption measures which align with international standards, best practices of leading corporations, and the National Anti-Corruption Strategy. PTT employs the “Strengthen from Inside” Strategy in forwarding its goal to become the pride of the Thai people, and encourages all management and employees to act as “PTT Brand Ambassadors,” in representing the organization and fostering the right understanding of its SPIRIT Values. In particular, PTT emphasizes the values, R – Responsibility for Society, I – Integrity and Ethics, and T – Trust and Respect, and has designated the Senior Executive Vice Presidents to be Champions for these values.

The I-Champion, in addition, has been assigned as the leading founder of the Integrity Power Club, which aims to cultivate a culture of good governance, transparency, and ethics within the organization. Employees are invited to become a member of the Club and collaborate in organizing activities which build awareness of ethics, demonstrate their commitment to honesty, courage in resisting corruption, and ultimately create a strong ethics network within the organization. Activities include participation in the National Anti-Corruption Day; engagement sessions with various institutes to showcase PTT’s commitment to ethical and transparent practices; as well as the Integrity Roadshow, in which PTT works to gather recommendations for improvement.

Aside from setting a good example across the organization, PTT has established communication and knowledge-sharing channels to disseminate and increase understanding of good governance principles to its employees and stakeholders. This includes, for example, the signed employee acknowledgement of the Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook; the Corporate Governance (CG) E-Learning System, CG Intranet, CG Training for new employee orientation, CG Roadshow, CG Camp, and PTT Group CG Day, where top-level management communicate their governance vision to the organization. In addition, PTT requires all employees to prepare an annual conflict of interest disclosure report as part of its efforts to prepare timely corruption prevention measures, and forestall the incidence of a conflict of interest from becoming a risk. PTT encourages all employees to report any inappropriate behavior, or behavior that is in violation of the Code of Conduct. Measures are in place to protect whistleblowers and complainants from any negative retaliation.

As a result of its performance on integrity and ethics, PTT has received national and international recognition from organizations specializing in ethics and transparency. For instance, Transparency International has evaluated PTT’s transparency in disclosure practices among major emerging market multinationals headquartered in 15 countries; the Office of the National Anti-Corruption Commission’s Integrity & Transparency Assessment (ITA) has awarded PTT a high level ranking for 3 consecutive years; finally, PTT was included in the Corporate Governance Assessment of Thai Listed Companies by the Thai Institute of Directors (IOD).



Ranked **22** out of **100**
most transparent
multinationals in
emerging markets



from the Integrity &
Transparency Assessment
(ITA)

The Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook

represents a working discipline in which all members of the PTT Board of Directors, management, and employees are aware of and must strictly comply with. In 2016, PTT revised the CG Handbook to include an additional requirement on insider trading, which specifies rules against the sales or purchase of PTT Group shares by PTT Board members, management, and related parties. Stipulations regarding anti-money laundering and gift giving were also added to the CG Handbook in compliance with the No Gift Policy announced in late 2016, in order to create transparency for all stakeholder groups during all stages of operations.

All employees fully disclosed their conflicts of interest, and no significant conflicts of interest have been found.

PTT Group CG Day 2016

"Over the past 38 years, PTT has proven its capability in delivering business competitiveness and fulfilling its mission to create energy security for Thailand. At the same time, another mission in which PTT has been committed is that of good governance, which is to be attained through transparent business operations, accurate disclosure of information, and the prevention of all forms of corruption inside and outside of the organization. Finally, it includes the prevention of insider trading, which is achieved through a policy that prevents the sales or purchase of PTT Group shares by Board members and management."



Mr. Tevin Vongvanich
President and CEO

Statement during a speech entitled,
"A Look to the Future of PTT Group in Combatting Corruption"

CG Roadshow

PTT organizes activities to enhance knowledge and understanding of good governance and anti-corruption under the 'CG Roadshow' platform, which specifically aims to engage with employees at Rayong Gas Separation Plant, Phra Khanong Oil Terminal, and PTT Research and Technology Institute at Wang Noi District, Ayutthaya Province. These activities, which focus on ensuring the proper implementation of CG principles in daily work life, included an exhibition on good corporate governance, dialogues to assess CG understanding, and a lecture by a panel of invited speakers entitled, "Organizational Transparency and Mutual Compliance to CG Principles." The successful event received a satisfaction score of 93.53% from participants regarding its format and content.



Anti-Corruption and Transparency

Across its business operations, PTT strongly adheres to honesty, transparency, and fairness, and does not tolerate any form of corruption. The PTT Group Anti-Corruption Policy is deployed through the PTT Way of Conduct to ensure collaboration, synergy, and trust within PTT Group for a sustainable and transparent future.

Following the announcement of the PTT Group Anti-Corruption Policy in 2015, PTT has worked to support PTT Group companies in conducting an assessment on their compliance to the Policy – to increase their understanding of existing management systems and identify improvement opportunities. Assessment results would then be integrated in the revision and improvement of management processes and mechanisms that are used to reduce potential impacts from corruption risks. Furthermore, in 2016, PTT announced the “No-Gift Policy,” with provisions against the giving or receiving of gifts or benefits of any kind – in line with the PTT Group Anti-Corruption Policy. These actions demonstrate PTT’s stance against all forms of corruption, along with the expectation that all personnel would comply with the aforementioned requirements to their fullest capacity, without anticipating any form of benefits in return.

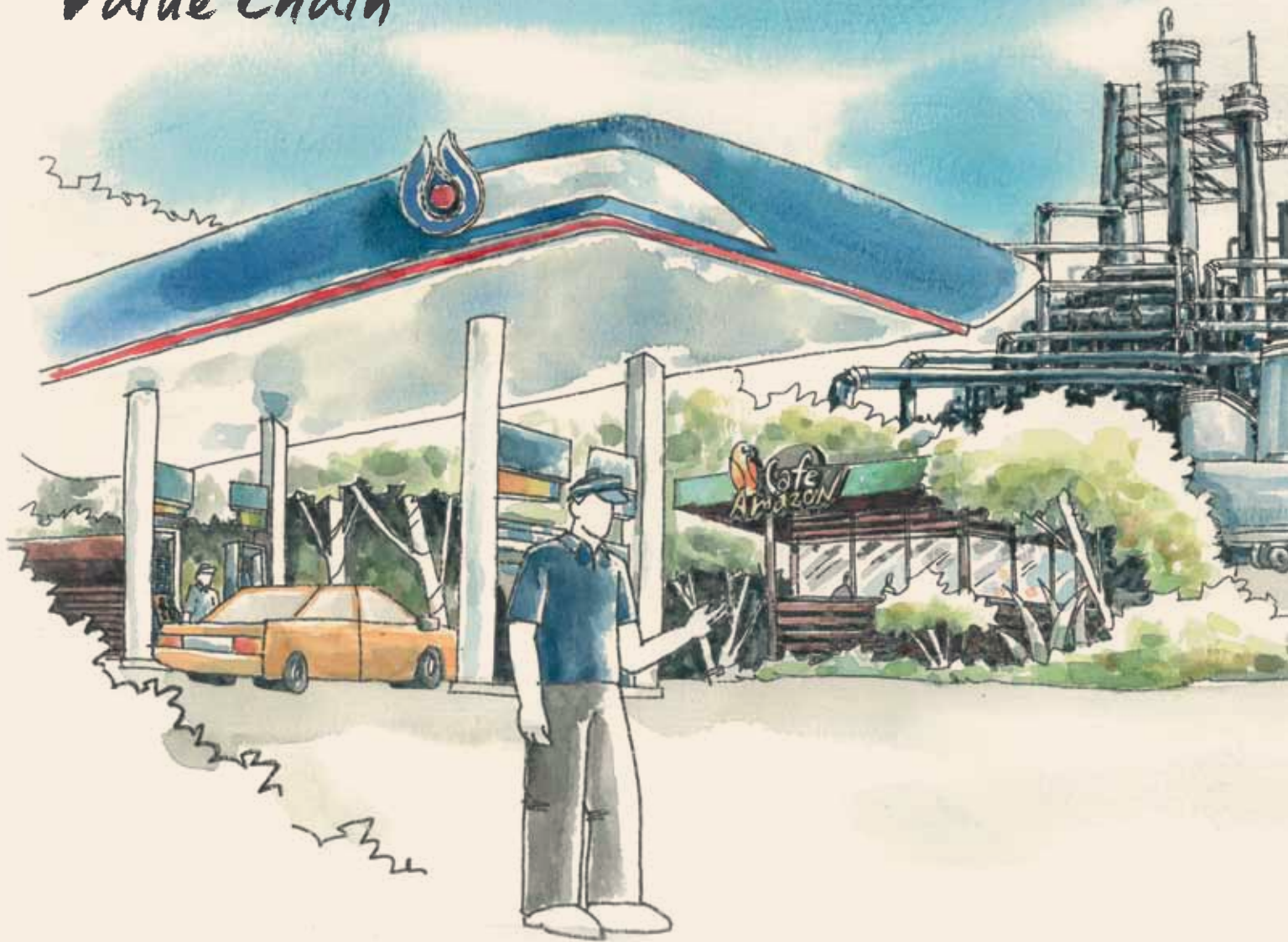
The PTT Board of Directors, specifically, attaches utmost importance to good governance and anti-corruption, as evidenced from its activities as follows:

- Providing support for PTT’s involvement in the Integrity Pact, a partnership on the prevention of corruption in state procurement between governmental agencies and bidders during the fiscal year 2016. The Pact requires all potential bidders to observe honest practices, reject all forms of bribery and other benefits, as well as disclose critical information concerning all stages of project development.
- Ensuring preparedness of PTT Group companies in their membership application to Thailand’s Private Sector Collective Action Coalition against Corruption (CACC), to develop their own anti-corruption measures and assure compliance to these measures in all operational areas. Similarly, PTT has also encouraged suppliers and sales representatives to initiate the membership process in order to eliminate corruption risks across its supply chain.
- Collaborating to form an anti-corruption network between governmental agencies and the private sector to push for concrete anti-corruption actions through various activities, such as the participation of more than 500 PTT Group management and personnel during the 2016 National Anti-Corruption Day, organized by the Anti-Corruption Organization of Thailand. This demonstrated PTT Group’s collective effort in working with all sectors to fully remove corruption from Thai society.
- Organizing an exhibition on good governance and the PTT Anti-Corruption Policy during the Moral Assembly, organized by the Moral Promotion Center (Public Organization). The Assembly serves as a central knowledge-sharing and policy development platform for organizations working to forward the integrity and morality agenda in all segments of society.

Given PTT’s continuous actions on good governance and anti-corruption, in 2017, a potential case of violation of the Code of Conduct and Anti-Corruption Policy was raised, that of the bribery allegations against Thai energy companies by Rolls-Royce Energy Systems, Inc. between 2000 and 2013. PTT is currently investigating the aforementioned allegation, starting with the formation of an Investigation Committee comprised of top-level management independent of the Rolls-Royce Engine procurement process, and coordinating with the Office of the National Anti-Corruption Commission (NACC) to ensure fair and accurate investigations. In addition, PTT is improving the procurement process to prevent wrongful acts by providing procurement guidelines for relevant personnel and setting up procurement database. For the capital project investment, PTT has participated in the Integrity Pact with the intention to support the principle of good governance, transparency and accountability.

Moreover, PTT has communicated with the public regarding its investigation through the company’s website at <http://www.pttplc.com/en/Media-Center/News/Business/Pages/news-2017-01-20.aspx>, and has issued a letter to the President and Management of the Stock Exchange of Thailand. In addition, PTT has participated in a seminar entitled, “Preventing Corruption from Taking Root in Thai Airways, PTT, and Thailand: The Rolls-Royce Bribery Case,” organized by the Anti-Corruption Organization of Thailand, to demonstrate its stance in managing and investigating the issue in a transparent manner.

Value Chain



"PTT determines its sustainable supply chain management approach by adhering to its risk management plan - covering economic, social, and environmental dimensions - as part of its goal as a national energy company to become the pride of the Thai people. Moreover, PTT enhances business growth and security through partnerships with suppliers, knowledge and technological development, and by responding to the needs of its customers."



No cases of legal non-compliance
across PTT's supply chain



Value creation from supply chain
collaboration **46.5** million baht



Cost reduction from supply chain
collaboration **495.7** million baht
from non-hydrocarbon and hydrocarbon suppliers

Supply Chain Management

PTT manages its supply chain with the goal of creating energy security and business continuity, in line with Thailand's Energy Security Policy and the organization's strategy to become the "Pride and Treasure of Thailand". Efficient management is therefore essential to reducing risks and delivering long-term revenue for PTT Group. Given this, PTT employs comprehensive risk management mechanisms across its supply chain and collaborates with various partners to ensure that the organization is prepared to handle the challenges emerging from volatility in the energy industry, possible future energy shortage scenarios, and challenges related to the management of a diverse group of suppliers.

Supply Chain Risk Management

PTT Group strives to maintain business continuity, reduce social and environmental impacts, and assume constant preparedness for emergency and crisis situations by applying measures and approaches which are appropriate to any given situation. Examples of this include enacting a policy of retaining petroleum reserves in higher quantity than required by law to guarantee readiness for changes in energy demand; entering short-term and long-term procurement contracts with PTT Group suppliers to procure each type of hydrocarbon, including Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG), crude oil, and fuel oil; entering SWAP Product agreements with external partners and suppliers to guarantee continuous product delivery to customers, and finally, assessing risks associated with product delivery by cargo ships, by implementing the Ship Inspection Report Program (SIRE) of the Oil Companies International Marine Forum (OCIMF).

PTT regularly reviews and improves upon the PTT Group Emergency and Crisis Management Plan, the Business Continuity Management Plan, and upholds its Crisis Management Standard at a consistently high, effective level. In 2016, PTT organized a simulation for the Black Swan Emergency Plan as a way to certify that management and relevant personnel are able to make decisions, deliver instructions, and act according to the responsibilities required of them under emergency conditions – the objective being that such parties are able to reduce the likelihood of business interruptions and simultaneously protect the interests of stakeholders as specified.



Research and Development Investment
1,371 million baht



8 Service stations
certified by the Green for Life
Eco-label

SWAP Product

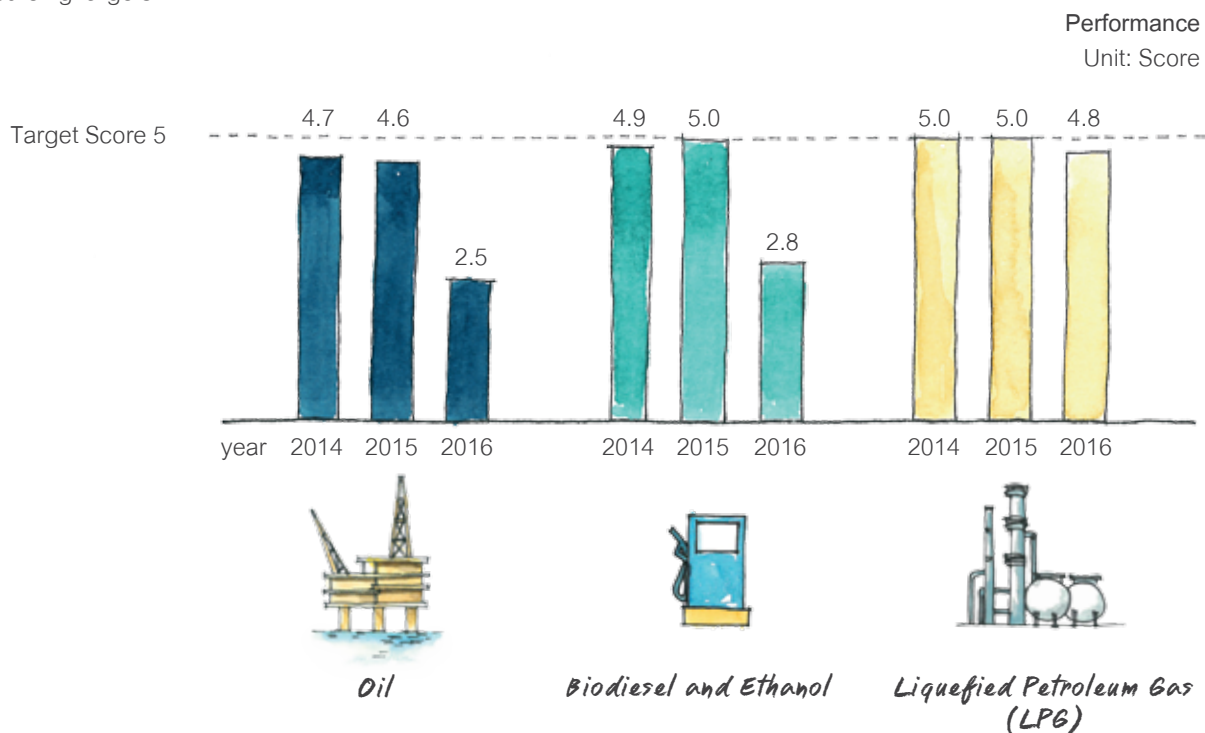


Over the past year, owing to natural hazards and stalled manufacturing processes, a number of suppliers were unable to deliver products to PTT according to plan. In response, PTT Group collaborated with business partners and suppliers during bi-monthly meetings and bi-weekly teleconference sessions, to analyze scenarios and determine appropriate remediation measures. The resulting approach involved collaboration between PTT Group and its suppliers to import products that could not otherwise be delivered due to the refinery manufacturing stall. This allowed PTT Group to avoid damage costs by approximately 19.2 million baht, to exchange products according to necessary specifications, and still maintain the smooth delivery of products to customers.

In view of its commitment to maintaining national energy security, PTT applies diverse mechanisms in forecasting available energy reserves. For instance, this involves utilizing communications technology in assessing supplier production capacity based on an analysis of historical data stored in the SAP program, such as the supply and demand ratio, production capacity, product imports and exports, and customer demand. Data and analysis from the Advanced Planner Optimizer (APO) of the SAP System is further used in developing procurement and product delivery plans that can sufficiently serve demand, thus protecting the country from energy shortage crises. Furthermore, PTT organizes an annual collaborative dialogue between PTT Group oil analysts, industrial refineries, and the Federation of Thai Industries to present relevant information on current oil scenarios and explore perspectives on the Energy Strategy. According to their analysis, the security of energy sourced by type is as follows:

Energy Sourcing Security

PTT assesses security in energy supply by evaluating the amount of average daily reserves of each product against monthly sourcing targets.



Remark: In 2016, the energy sourcing security score for oil, biodiesel and ethanol, and LPG decreased from 2015 owing to an adjustment in methodology, which made the evaluation criteria more challenging in order to enhance management efficiency.

PTT has, furthermore, expanded its investments in renewable energy in response to the policy on new business development for sustainability and global trends that are increasingly gearing towards renewable energy. For example, PTT is supporting the government's policy in increasing ethanol procurement capacity; expanding the sales volume of Gasohol E20 and E85 products; and embarking on a joint venture with Mitr Phol Biofuel Co., Ltd (Chaiyaphum Province) in the construction of an E85 blending facility to elevate production capacity and deliver higher volumes of Gasohol E85 products to North and Northeastern Thailand. Moreover, PTT has complied with the policies of the Department of Energy Business in changing biodiesel proportions to match current energy conditions, as appropriate.



Supplier Management and Engagement

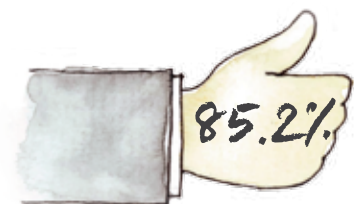
Given that PTT conducts transactions with a diverse and large quantity of suppliers – from small domestic businesses to large multinational corporations – supplier management must be carried out with due consideration for the level of supplier risk and the magnitude of potential economic, social, and environmental impacts that may arise across its supply chain. PTT, therefore, categorizes its suppliers into three groups for management: Critical, Key, and Manage. For more information on approaches in supplier management for each category, please visit: <http://www.pttplc.com/en/Sustainability/Pages/Sustainability.aspx>

Throughout its procurement process, PTT has established criteria evaluating suppliers on business ethics, social responsibility, safety, and environmental management. These considerations apply in supplier requirements, general terms and conditions, as well as the PTT Supplier Sustainable Code of Conduct (SSCoC). 89% of suppliers signed an acknowledgement of the Supplier Sustainable Code of Conduct, compared to target of 100%. Suppliers and contractors must comply with the abovementioned requirements, and critical suppliers, in particular, must conduct a Sustainability Performance Assessment. In 2016, the PTT Working Group, together with an external party, conducted 13 supplier sustainability audits, or 81.25% of audits against annual plan. During the same year, monthly communications were also carried out to assess the capabilities of refinery suppliers, with the decision by PTT that suppliers consistently demonstrating operational efficiency and strong sustainability performance will receive consideration for reduced audit frequency, determined on a case-by-case basis. For non-refinery suppliers, audits were not able to be carried out due to the occurrence of natural hazards. Nevertheless, PTT did not encounter any cases of violations of regulations, laws, or the Supplier Code of Conduct.

Supplier satisfaction
in working with the PTT
Procurement Function:



Hydrocarbon Suppliers



Non-Hydrocarbon
(Products and Services) Suppliers



Combating Corruption in the Supply Chain

In accordance with the National Strategy on the Protection and Suppression of Corruption, Phase 2 (2013-2017), which specifies measures for the protection and suppression of corruption in state procurement to enhance process efficiency, PTT has carried out the following actions:

Integrity Pact

In 2016, PTT participated in the Integrity Pact as part of the Corruption Prevention Partnership Project in state procurement practices. The Integrity Pact represents one of the tools in which the government has adapted for use in Thailand to increase efficiency in spending and elevate transparency in state procurement processes, and which will influence the development of Thailand's Corruption Perceptions Index (ICP). Through participation in the Integrity Pact, PTT not only solidifies its commitment to "Pride," – namely, to be a transparent organization that values honesty in business across all stages of operations, but also its stance against the acceptance of any form of bribery or benefit. It is a confirmation to PTT's stakeholders of the organization's fair and transparent procurement practices, as efficient procurement has the potential to deliver concrete benefits to both PTT and the country. Not only that, the Pact supplements Thailand's reputation among international investors, and by connection the national economy. The PTT project chosen for participation in the Integrity Pact was the Gas Compressor Station Project at Wang Noi. Equipped with a 4,800 million baht



budget, the project aims to build stability in energy security through the delivery of natural gas to electricity generating plants. In line with the Pact's requirements, the following steps were taken:

- Signing of the "Integrity Pact" between 3 parties: PTT, the bidder, and an external witness to ensure that each party carries out honest procurement practices
- Invitation of witnesses to observe all stages of the procurement process
- Disclosure of procurement information on PTT's website

Not only that, PTT has continued working to build supplier understanding of the Sustainability Management Policy through the annual Supplier Relationship Management Seminar. In 2016, PTT organized a seminar entitled, "Transparent Procurement for a Sustainable Thailand," during which the organization communicated its business direction regarding transparency and anti-corruption with suppliers, procurement and user functions in PTT, and PTT Group representatives. Employees also received training on workplace transparency as part of PTT's efforts to create understanding and strict compliance with the above policy. In terms of internal management, the PTT Procurement Investigation Committee assumes responsibility in governing the overall procurement process to ensure transparency and accountability of all business units. The Committee conducts annual investigations of procurement processes, the results of which are then adopted for performance improvements in the form of indicators, working plans, and training courses.

Value Creation across the Supply Chain

PTT encourages collaboration between suppliers and the procurement functions of each PTT Group business unit, as doing so not only leads to the continuous improvement of procurement processes, but also the attainment of highest benefits and strengthened capabilities for all parties involved. In 2016, PTT initiated the Large Import Cargo Value Enhancement Project to respond to increased motor gasoline demand, which has risen as a result of the global oil price downturn and changes in preferences of motor vehicle users who have shifted from LPG to benzene use – due to an increasing trend in LPG prices tied to revisions in governmental policy. With this consideration in mind, PTT improved upon its storage and pipeline systems to allow for the higher import of benzene from 5-7 million liters each time, to 50 million liters. This amounted to a reduction in import and investment costs by approximately 650-700 million baht per year, and additional value creation of 400 million baht per year. Moreover, this project was able to showcase the SPIRIT Values at work, with a clear demonstration of collaboration between numerous functions to increase skills and disseminate knowledge during operations.

Regarding collaboration between direct business partners, PTT has been partnering with PTT Group refineries under the Petrochemical and Refinery Supply Chain Management (PRISM) Project, which over the past year was able to generate business value by 46.5 million baht per year, and reduce costs by 94.5 million baht per year. A notable project under PRISM is the High Value Product Market Expansion Project focusing on market research and new product and service development. Success factors of this project include the creation of a business network, a refinery configuration that is able to adapt product manufacturing according to customers' needs, and supply and logistics management. This project successfully generated value for PTT of up to 1.6 million baht, owing to new products developed such as PTT Hyforce Premium Diesel, and PTT HSD Euro V for Winter.

High-Speed Diesel Product Exchange Project

PTT has partnered with the refinery of Bangchak Petroleum Co., Ltd in developing a project for the sales and exchange of high-speed diesel products through shipping and pipelines. The benefit of this project is primarily in the improvement of ship transportation management. Initially, PTT had transported oil from refineries via ship to the Phra Khanong Oil Terminal. However, following project implementation, PTT was able to reduce the quantity of oil transported by ship to the Phra Khanong Oil Terminal by 5-20 million liters per month, as Bangchak now undertakes the responsibility of directly transporting oil to PTT's Phra Khanong Oil Terminal by pipeline. Following delivery of the oil to PTT, Bangchak refinery receives products in return by ship. This project was able to reduce supply costs by approximately 6 million baht per year.

PTT Group Strategic Sourcing

Since 2007, PTT and PTT Group companies have signed a partnership to collectively source products and services, with the aim to create business opportunities and support PTT's "Treasure" Strategy. As part of this initiative, PTT conducted a spend analysis of PTT Group's common spending to identify a list of products and services that can be collectively procured. The result being that PTT Group was able to assume higher negotiating power with its hydrocarbon suppliers, reduce costs by 401.2 million baht in 2016, and support supplier capacity development through business collaboration with PTT Group companies.



Products and Customers

“PTT’s primary mission in product and service development is to research, improve and sought for better products and services. The development process will factor in customers’ needs, economics consideration, environmental and social footprints, as well as PTT’s strategic advantage, in order to ensure a positive customer experience and sustainability toward the company.”

Value Creation through Innovation

PTT is committed to deliver business and social values through innovation and technology that bolster sustainable development in all aspects. This is in addition to strengthening the capabilities to create innovation and visionary technology according to Thailand 4.0 Model. The goals are for industrial adoption, value generation in industrial sector, and competitive capacity enhancement for innovation. PTT will take into consideration challenging factors relevant to policy consistency, and rapidly evolving technological trends, both those in the short run and the longer run. These efforts facilitate the work on the company’s development plan to be more efficient, and strengthen its position as an innovation leader. This can be accomplished through an adaptation from a resource-based business operation into becoming an organization of learning.

PTT Research and Technology Institute (PTT RTI) has a crucial role in supporting all business units in PTT, when it comes to research, product and service innovation. All units must work in alignment with the new corporate strategy consisting of: “Do Now”, refers to the enhancement of efficiency and maximization of available resources; secondly, “Decide Now”, refers to the decision to sought for uninterrupted investment opportunities in an operating business; thirdly, “Design Now”, refers to an effort to build an S-Curve, which is achieved through identification of new businesses outside the scope of petroleum and petrochemical. This new strategy will aid PTT to grow stably and sustainably. In the past years, PTT has conducted an evaluation on the organizational capacity in its product development. The evaluation used R&D Performance Index, which reveals the Index to be at 356. This was higher than the targeted 348. PTT has developed 60 original products and services, as well as registered for 12 patents.

Renewable Energy Service Station

PTT realized that impacts generated from the growth of electric vehicles may possess a risk to the oil business in the long run. The rational was that plug-in hybrid electric vehicle (PHEV) uses less oil, and electric vehicles with a fully-equipped voltage capacitor are gaining ground in the market. As a result, PTT has begun research and development of battery chargers and Open Charge Point Protocol (OCPP). This is in addition to installing 6 pilot electric vehicle charging stations, and a plan to design for solar electric vehicle charging station. Conjointly with the above efforts, PTT has formulated a plan to address any changing marketing mechanisms. PTT has signed a memorandum of understanding (MOU) with 6 vehicle manufacturers, with the goal to work conjointly with them for the development and trials of pilot PTT EV Station. These will be conducted along with feasibility studies on electric vehicle business development, in respond to governmental policy to embolden electric vehicle adoption in Thailand.

Mercury Absorbent Project

PTT has developed mercury absorbent for usage in natural gas separation plants. These absorbents will replace imported absorbents from abroad. The present absorbents have been developed for better efficiency and better pricing than their imported counterparts.



*As much as **2,000 USD** will be taken off the initial cost.*

The pilot will start using 40 tonne absorbent at natural gas separation plants’ by-pass MRU unit in 2017. Notably, there is a tentative plan to extend the adoption in other units in PTT Group. Currently, 435 tonnes of mercury absorbent are used within PTT Group, with values estimated to 310 million baht per year. Disposal process remains the same as imported absorbents, as the financial benefits of recycling has yet to outweigh the initial cost. A mercury absorbent remains functional for approximately 5 years.



In **2017**, there is a construction plan for additional **14** EV vehicle stations, totaling **20** stations.



EV Stations

Within **2016** PTT has installed a total of **6** pilot EV Stations, as follows:

- PTT Building, Head Office, Bangkok
- PTT Research and Technology Institute, Wangnoi District, Ayutthaya
- PTT Service Station, Lamchabang (outbound road) branch, Chonburi
- PTT Service Station, The Crystal – Chaiyapruke branch, Bangkok
- PTT Service Station, Welfare for Office of the Permanent Secretary Ministry of Defense branch, Bang Na Road (inbound), Bangkok
- PTT Service Station, Welfare for Office of the Permanent Secretary Ministry of Defence branch, Bang Na Road (outbound), Bangkok

Green Products and Services

Presently, purchasing behaviors of customers are more likely to be influenced by how eco-friendly a product is. PTT collaborates with a multitude of agencies, both in PTT Group and externally, in the development of eco-products. This includes biofuel, which directly addresses customers' need. Additionally, it is also crucial to raise the customers' understanding in eco-product selection, by making use of eco-labels and certifications.

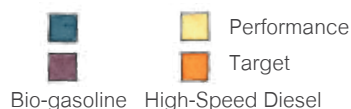


36,706.42
million baht generated from
eco-products and services made
up to 1.8% of the overall revenue.



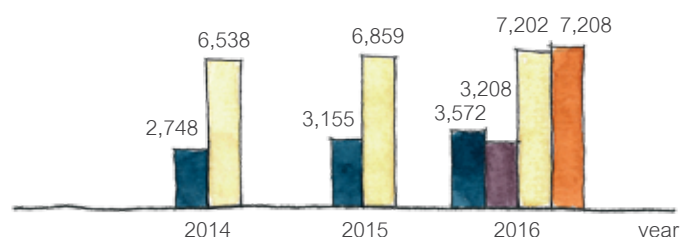
Biofuels in Thailand

Unit: million liters



Remark:

Restatement of the volume and targets for both types of biofuels in 2015-2016



PTT has conducted studies and environmental impact evaluations throughout its products' life cycle. In addition, PTT has also registered its products' carbon footprints to encourage customers to become more aware of each product's greenhouse gas emission prior to their purchasing decision. The registration also stimulates entrepreneurs to adjust their production technology to be more environmentally friendly. As of now, there are 5 registered PTT products with an active contract that has received carbon footprint labels.

Carbon Footprint Certified Products

GHG Emission Value (gCO₂eq/kg)



492
Natural Gas
Vehicle (NGV)



752
Ethane



756
Propane



748
Liquefied
Petroleum Gas (LPG)



762
Natural Gas
Liquids (NGL)

Furthermore, in 2016, PTT continues to promote the environmental self-certified label or the Green for Life label. This encourages consumers to become more aware regarding PTT Group's responsibility when it comes to their products and services. The 8 certified service stations consist of: PTT service stations (Wangchan branch, Lamchabang (inbound road) branch, Lamchabang (outbound road) branch, and Head Office branch) and PTT natural gas service stations for vehicles (petroleum (Ramindra) branch, Sapthevi natural gas branch, Roongtaweasap Nonthaburi Service branch, and Settha branch).



Customer Relations

PTT has designed a multitude of communications and feedback mechanisms for its customers. This includes annual customer assembly, customer visits, quality checks for service and public relations, as well as a provision of supporting websites for clients to search for momentous product and service information. These efforts will advance PTT to become an organization with a customer centric operation in the current climate of digital economy,

Customer Satisfaction Survey Results (percentage)



	Oil	Natural Gas				International Trading
		Natural Gas	Electricity	Industry	Petroleum and Petrochemical Products	
2016 Targets	>95	93.0	91.6	93.0	93.0	>90
2016 Satisfaction Level	95.0	89.0	89.1	89.5	92.1	85.0
2015 Satisfaction Level	97.0	92.0	90.6	92.0	92.0	89.0

Customer satisfaction survey reveals that 2016 overall satisfaction was under targets, and decreased further since 2015, with the exception of natural gas business, petroleum and petrochemical product groups. PTT has followed up and communicated with its customers and business partners to understand causes of the 2016 overall dissatisfaction. One of the primary causes was unveiled to stem from the adjusted price structure, due to oil price fluctuation within the global market that was occurring through the year. Other concerned issue is the uncertainty regarding gas depletion at the production source. This results in a more limited capacity when it comes to addressing customers' needs. Additionally, business deceleration due to the economic climate also limits activities with customers. For example, it changes the

needs of natural gas customers. PTT has utilized the survey's results to facilitate in their specification of a guideline for customer relation management. It has developed greater understanding with its customers and trade partners on factors out of PTT's controls. This includes a capacity development guideline for better handling of customers' and business partners' needs. Such practice was conducted to maintain high quality of service and satisfaction level of all customers. However, in 2016, no regulatory, principles or legal violations on safety and hygiene have been identified within PTT selling and service providing practice, whether domestic or international. No violation on product labeling principles, customers' confidentiality, and products' marketing communications have been identified either.

The Oil Business Academy (OBA) at Wangnoi District, Ayutthaya Province was established by the Oil Business Unit. The Academy's objective is to be a learning center for oil business. In 2016, there are 69 courses available, with over 6,500 people trained, ranging from employees, distributors, to business partners. The emphasis was on capacity training of relevant personnel. This will contribute to consistent and uninterrupted delivery of positive experience for customers.



Coffee Beans

- Requires approximately **2,700** tonnes of raw coffee beans annually
- Provides support to the Royal Project's raw coffee beans and from local coffee farmers
- Promotes the Royal Project in Research and Development Project for environmentally friendly coffee plantation and production in two areas, in Jomthong District, Chiangmai Province
- Builds and supports job opportunities in environmentally friendly and fair coffee trades, without middlemen, for communities.



- Internationally certified coffee roasting plants
- Training center
- Educational exhibition

Café Amazon Business Center



- There are **1,480** branches in Thailand. It will expand to 200 branches in Thailand each year.
- The business expansion plan aims for **400** branches internationally by 2021. Presently, there are:
 - 15 branches in Laos
 - 13 branches in Cambodia
 - Openings in Myanmar, the Philippines, Japan and Oman.

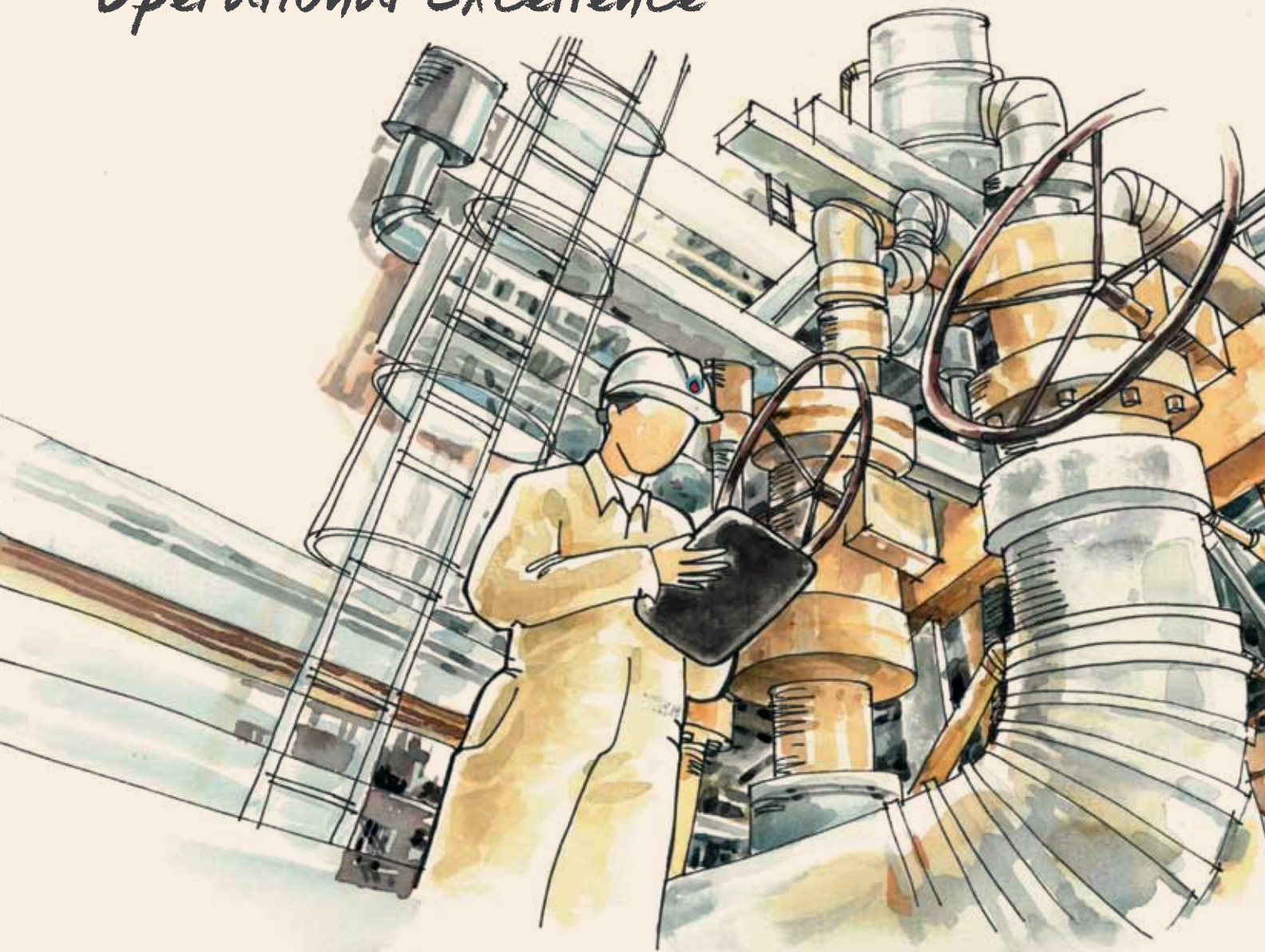
Café Amazon



Café Amazon coffee

Sales reach **140** million cups annually

Operational Excellence



"PTT's business direction must maintain the balance between business growth and environmental sustainability through the effective occupational health, safety and environmental management approaches integrated with environmental technology and innovation in business operation. It also includes building relationship with communities through responsible project management."



Environmental investments
488 million baht



Energy intensity
was reduced by
1.6%



GHG Scopes 1 and 2
emission reduction
1.3 million tonnes of CO₂ equivalents

Environment

In responding to the global challenges, such as the efficient use of limited natural resource, the mitigation of climate change impacts in the industrial sector, and the response to all stakeholders' expectations at the national and international level on the role of the organization in sustainable business practices, PTT has focused on the implementation of the Green Roadmap - environmentally conscious management using modern technology in operational processes to improve energy efficiency, reduce GHG emissions, pollution and waste, and raise awareness of environmental conservation from within PTT group to partners, customers and the general public.

One of the indicators for environmentally conscious operations is the strict compliance with laws, regulations and standards. PTT has seriously assessed its compliance with relevant laws and regulations in all operational areas and has defined appropriate corrective measures and monitoring processes. For instance, the Wastewater Management Working Group is established to manage the quality of effluent generated from gas stations, operated by the Oil Business Unit. The Working Group also defines corrective and preventive measures and guidelines in case the effluent is likely to exceed the standard thresholds regarding environmental laws, as well as ensuring that the same circumstance will be inhibited. In 2016, there was no case of environmental and safety violation against the laws or regulations.



PTT QSHE Legal Management Center

PTT is a part of the working group consisting of government and private sectors, providing opinions and recommendations for law, regulation and standard drafting. In addition, PTT analyzes the impact of changes in the laws and regulations to establish supportive measures and to prepare readiness of its businesses for the anticipated relevant laws and regulations in a timely manner. Hence, PTT has established the Web application: PTT QSHE Legal Management Center which is a database system of laws-related information and best practices for all divisions in PTT. The system enables PTT to enhance a legal compliance plan and conduct the respective assessment completely and rapidly.

In 2016, PTT started environmental accounting to collect data on environmental investment. The environmental costs are consolidated based on the cost categories according to the standard of Environmental Management Accounting Procedures and Principles, UN 2001. PTT has invested 488 million baht for the environmental protection, preservation and impact mitigation, in which 142 million baht were returned on the environmental investments, mostly from increasing productivity system.



Climate Change and Energy Management

PTT has driven the greenhouse gas (GHG) management at policy level through the Green Roadmap, and has targeted the reduction of GHG intensity by 5% until 2020 compared to the base year 2012. In addition, PTT has also targeted the GHG emissions intensity per unit of product sold. The target for GHG intensity has been set based on the State Enterprise Performance Appraisal (SEPA) since 2012. In responding to PTT's target and GHG management policy, PTT has implemented following GHG management measures:

- Research and development on carbon capture and reduction, including carbon offsetting through various mechanisms; collaboration with government and private sectors in climate change-related activities and policies such as joining the Nationally Appropriate Mitigation Actions (NAMAs)
- Internal process management to improve energy efficiency and reduce GHG emissions
- Environmentally friendly products, focusing on low carbon sourcing and production, as well as low carbon products sales, such as gasohol, biodiesel, 'PTT Composite Plus' LPG cylinder, bioplastic coffee cups for Café Amazon.
- Environmental awareness within PTT group and expanding to partners, customers and the society through various GHG reduction projects such as reforestation and community service projects.

Thailand has signed and ratified the Paris Agreement of the COP21 Conference and has announced the pledge to reduce the GHG emissions by 20 - 25% by 2030 by reducing consumption of energy produced from fossil fuels and seeking eco-friendly energy platform, such as hybrid engine vehicle and electric vehicles initiatives. PTT is adjusting its target on GHG reduction in 2030 to comply with the national GHG reduction target, and will launch the new target in 2017.

Achievements in GHG Reduction



*In 2016, PTT has achieved the 2020 strategic target of reducing the GHG intensity by **5%** compared to the base year 2012.*



Direct and Indirect Greenhouse Gas Emissions of PTT Group¹

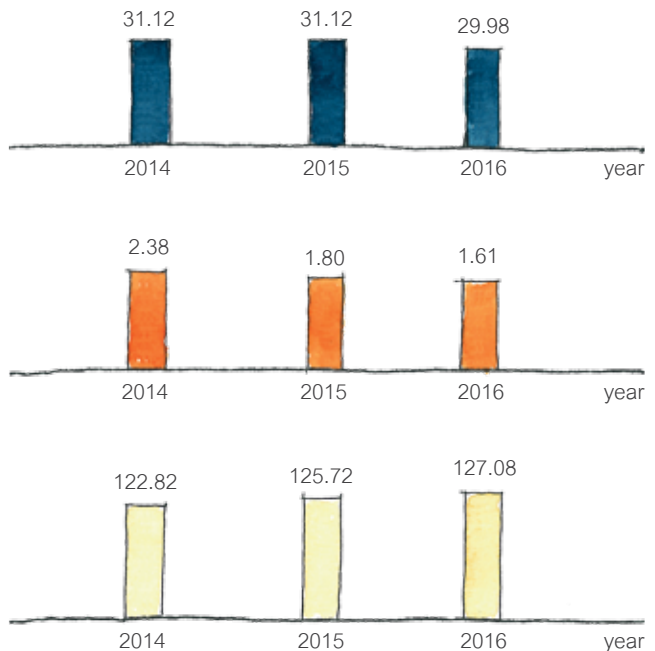
(million tonnes of CO₂ equivalents)

- Direct GHG emissions (Scope 1)
- Indirect GHG emissions (Scope 2)
- Indirect GHG emissions from combustion of PTT's fuel products sold (Scope 3)²

Remarks:

¹ The scope of data covers companies in Thailand in which PTT hold direct shares more than 20% and hold indirect shares for 100%.

² The scope of indirect GHG (Scope 3) covers the combustion of PTT fuel products. PTT has set the target to control indirect GHG emissions (Scope 3) based on the amount of PTT's direct and indirect GHG emissions (Scope 1, 2 and 3) per unit of PTT products sold as defined by the State Enterprise Performance Appraisal (SEPA).



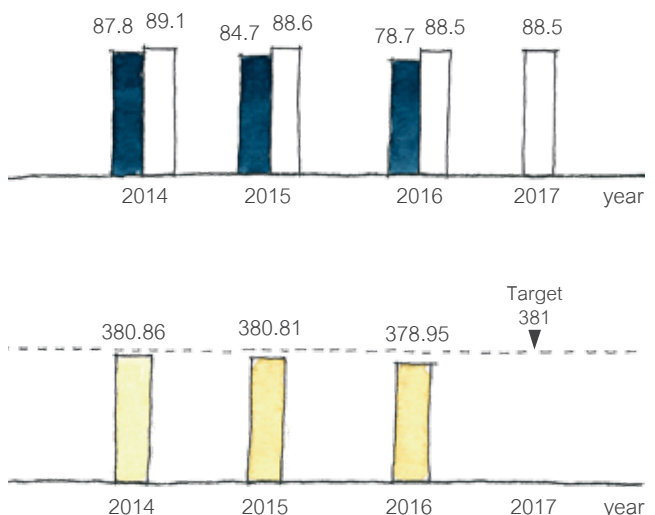
Greenhouse Gas Intensity

(kilogram CO₂ per barrel of oil equivalents)

- Greenhouse gas intensity from direct and indirect activities (Scope 1 and 2)
- Target
- Greenhouse gas intensity from direct and indirect activities and from combustion of PTT's fuel products sold (Scope 1, 2 and 3)
- Target

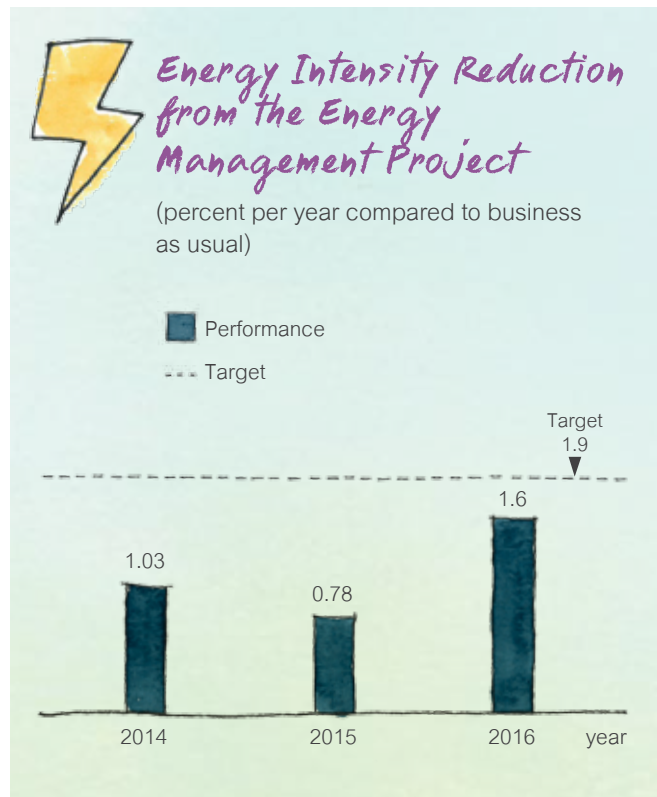
Remark:

The scope of data covers companies in Thailand under PTT's operational control in which PTT hold direct shares more than 20% and hold indirect shares for 100%.



Energy Efficiency

In addition to the GHG management, PTT emphasizes the importance of energy conservation and energy efficiency in order to reduce the climate change impacts. PTT has integrated the energy efficiency roadmap into the PTT Group Energy Efficiency (EE) Master Plan by setting strategic targets to reduce the intensity of energy consumption by at least 1.9% per year compared to the business as usual baseline until 2017. In 2016, PTT has reduced the energy intensity by 1.6% through various projects and activities, such as expanding the scope of PTT Group energy conservation and energy efficiency project to the petroleum terminal operation. In addition, the Rayong Gas Separation Plant has implemented an energy consumption reduction project by optimizing the heat exchange system at the third pipeline pressurization unit, resulting in the recovery of waste heat equivalents to 662,207 gigajoules per year of energy saving and 112,977,720 baht per year of cost saving. In the meantime, PTT is setting a new target for 2020 to strive for operational excellence.



Remark:

The scope of data covers PTT's Rayong Gas Separation Plant, PTTEP, PTTGC, TOP, and IRPC.

Methane Gas Management

PTT has assessed methane leakage in the exploration and production business and the natural gas for vehicles business unit using infrared cameras or acoustic detectors. All detected leak spots were fixed as planned by repairing and replacing of equipments. Consequently, the leakage of methane was reduced by 4% of the total volume of methane leakage compared to the performance in 2015. In addition, PTT has maintained its status as a member of Climate and Clean Air Coalition: Oil and Gas Methane Partnership (CCAC: OGMP) through the United Nations Environment Programme (UNEP), and reported the results of methane management in 2016 for the first year according to the requirements of this partnership. Being a member of CCAC partnership places PTT on leader position with other world-leading oil companies, and demonstrates PTT's commitment to becoming a transparent company by disclosing its performance data and methane management measures with regards to the CCAC collaboration and agreement.



Integrated Water Management

Climate change is one of the challenges to efficient management of water resources in PTT's operational areas and to the water users in all sectors. Water shortages in the operational areas may significantly affect the production process and activities related to business operations. Therefore, the PTT Group Water Management Working Group has the duty to closely monitor and forecast the trends of water storage capacity by applying the long-term weather forecast and hydrological model. PTT can estimate water storage capacity in the main reservoir in Rayong province for 6 months, 1 year, and 20 years in advance. In addition to water reservation forecast, PTT can forecast the likelihood of droughts up to 6 months in advance using rainfall data since 2014. In 2016, PTT has applied the water storage forecast to the Prasae reservoir, which is the main water supply for PTT in case of water shortage, in order to estimate the water budget in the next 6 months. The prediction period can be extended to 1 year in advance by using statistical models.

In addition, PTT is developing a system to predict the water demand in the industrial area of the Eastern region, which will be completed by 2018. The results will be used to support water supply management for all sectors, and to study the effects of climate change to rainfall, temperature and amount of water in the main reservoir in Rayong province within the next 10 and 20 years. Furthermore, PTT has studied the risk of water shortage caused by external factors assuming when the water intake is reduced by 10%, 30% and 50% compared to the normal conditions. The results can be used in defining appropriate approaches to adapt to and cope with water insecurity in the operational areas. PTT has classified 3 approaches to deal with water insecurity: alternative water sources plan, seawater desalination research plan, and 3Rs plan. PTT has taken the short and long term measures to manage water resource, including water diversion projects and long-term water infrastructure development project.

Water Resources Management Measures

Study on the trend of water source

- Research on rainfall and runoff forecast
- Study on the impact of climate change



Measures to prevent water shortage 2016-2018

- Water diversion from Prasae reservoir into Rayong region
- Water diversion from Bang Pakong River and private water sources into Bang Phra reservoir
- Water diversion from Pra Ong canal into Bang Phra reservoir

Infrastructure development projects

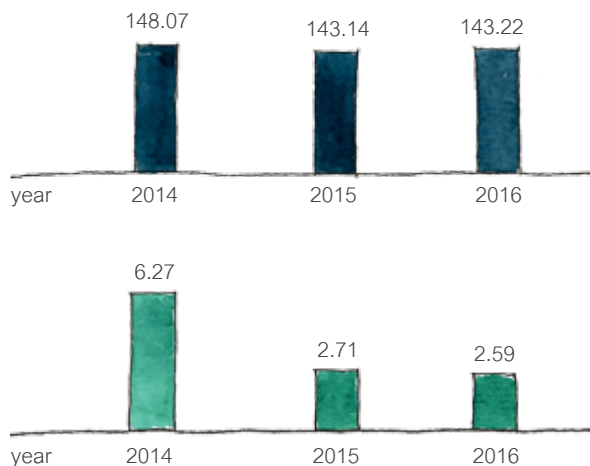
- Construction of electrical system and Prasae water pumping station
- Water transmission pipeline from Prasae reservoir to Nong Pla Lai water source
- Second water transmission pipeline from Nong Pla Lai to Nong Kho water source
- Watergate construction at Nong Waen water source



Water Management

(million cubic meter)

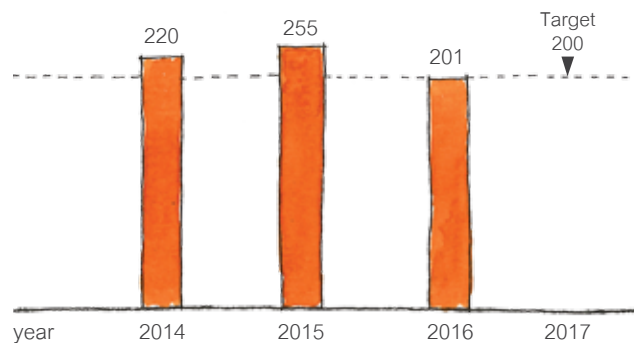
■ Water consumption
■ Recycled and reused water



Water Storage Capacity for PTT's Operational Areas in Rayong Province

(million cubic meter)

■ Performance
--- Target



Remark:

The scope of the data covers three main reservoirs: Dok Krai, Nong Pla Lai, and Khlong Yai.

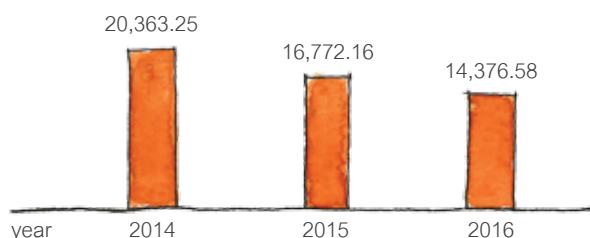
Air Quality Control

PTT has implemented the pollution reduction technologies that reduce emissions at the source and enhance efficiency of treatment system, such as Dry Low NOx Emission (DLE) and Selective Catalytic Reduction (SCR) to control quality of exhaust gas and consequently minimize the environmental impacts.

Besides the aforementioned measures to reduce air pollution, PTT has committed on controlling and monitoring air pollution in a way that is internationally recognized. PTT has continuously observed and measured the amount of VOCs leakages from the operational devices, either with infrared cameras or with photo-ionization detectors according to international methods, leading to immediate responses and mitigation of detected VOCs leakages from the devices. In addition, air quality modeling has also been used to assess the distribution of air pollutants in order to continuously monitor and promptly plan for the environmental impact mitigation of air pollution.

Oxides of Nitrogen (NOx)

(tonne)

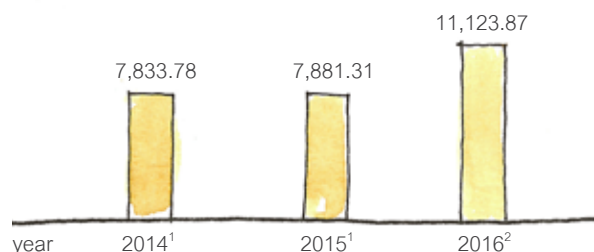


Remark:

Nitrogen oxide (NOx) is mainly emitted from the petroleum drilling and production process. In 2016, PTT reduced the operations of those activities.

Sulfur Dioxide (SO₂)

(tonne)



Remarks:

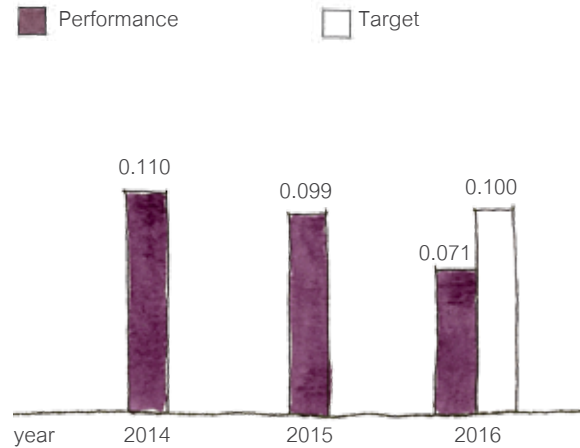
¹ In 2014 - 2015, the scope of data covers PTT, PTTEP, PTTGC, TOP, IRPC and GPSC.

² In 2016, the scope of data covers PTT, PTTEP, PTTGC, TOP, IRPC (including the Upstream Project for Hygiene and Value Added Product: UHV), and GPSC.

Volatile Organic Compounds (VOCs) Emissions per Distribution Unit¹

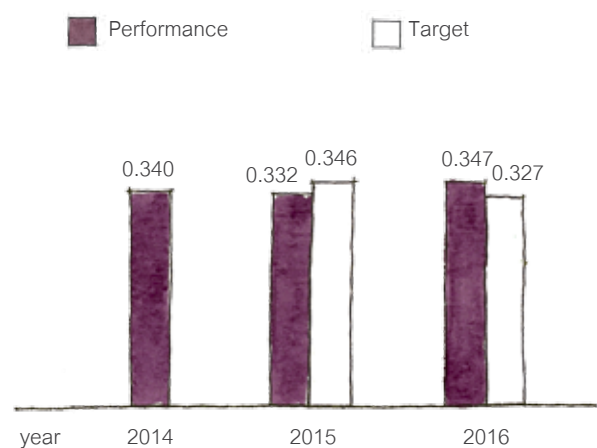
Rayong Gas Separation Plant²

(kilogram of VOCs per tonne production)



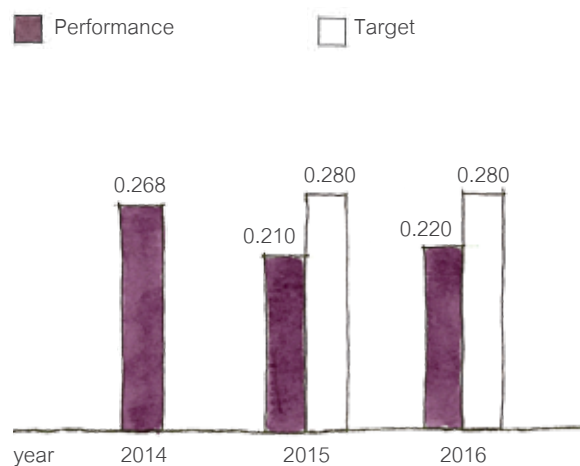
Oil Terminal³

(tonne of VOCs per million liters of production)



Liquefied Petroleum Gas (LPG) Terminal

(tonne of VOCs per million liters of production)



Remarks:

¹ In 2017, PTT adjusts the target of VOCs intensity not to exceed 19 tonnes VOCs per million barrel oil equivalent for Rayong Gas Separation Unit, Liquefied Petroleum Gas (LPG) Terminal, and Oil Terminal

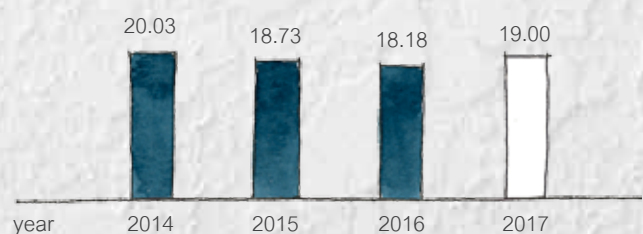
² In 2016, VOCs emission per production of Rayong Gas Separation Plant was lower than the past two years due to an improvement of the data collection method for greater accuracy.

³ PTT expanded the scope in 2014 to include 5 additional oil terminals, totaling 9 oil terminals, and another 6 petroleum terminals.

VOCs Intensity

(tonne of VOCs per million barrels oil equivalents)

Performance Target



Remark:

The scope of data covers Rayong Gas Separation Plant, Liquefied Petroleum Gas (LPG) Terminal, and Oil Terminal.

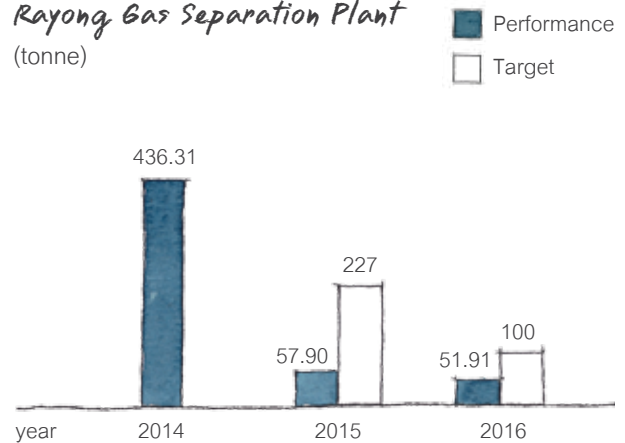
Waste Management

PTT has placed an importance on the waste management by reducing the amount of waste based on the 3Rs principle: Reduce, Recycle, and Reuse. PTT aims to reduce the volume of industrial waste disposal to landfill to zero by 2020. To achieve the target, PTT has continuously implemented the pilot project of waste pooling without landfill disposal. The database of the amount of industrial waste to landfill from PTT Group, including 11 companies located in Rayong and Chonburi provinces, is analyzed. The industrial waste is then sorted and collected for further disposal. Types of industrial wastes sorted from the pilot project are carbon black, insulation (rock wool, foam glass, silica), refractory brick, scrap rubber, copper slag and contaminated materials. The waste collectors are managed to receive and transport wastes from more than one company per day to the disposal site, resulting in 40,000 baht cost saving and 20 tonnes of waste sent to landfill reduction per round per day.

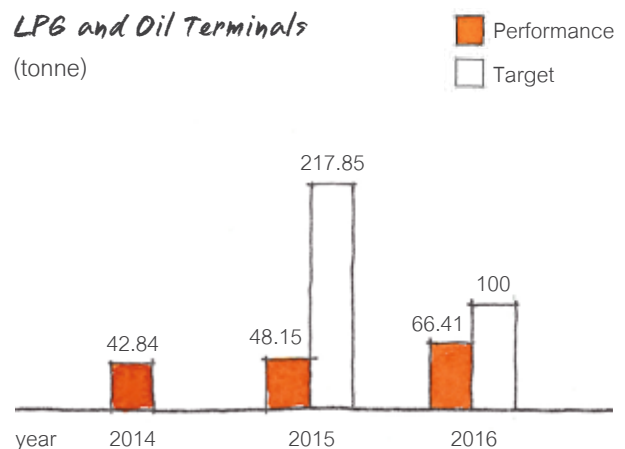


Hazardous Waste to Landfill

Rayong Gas Separation Plant
(tonne)



LPG and Oil Terminals
(tonne)

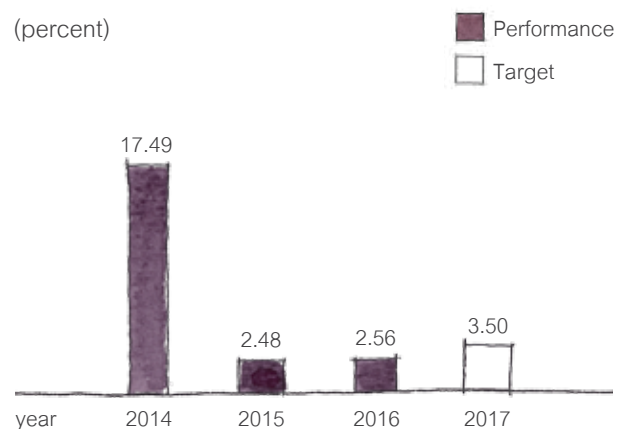


Remark:

In 2017, PTT adjusts the target of routine hazardous waste to landfill not to exceed 3.5% of total routine hazardous waste.

Percent of Routine Hazardous Waste to Landfill of Total Routine Hazardous Waste

(percent)



Oil and Chemical Spills

Since the leakage of oil and chemicals broadly affects all stakeholders, PTT places high emphasis on personnel and equipment readiness to response to emergency spill incidents, such as establishing an emergency team, using devices to detect gas leaks, installing oil containment booms in all operational areas where there is a risk of oil spills, and installing off-valves system controlled by satellite in the gas transportation system. Additionally, emergency plans and drills are established and regularly carried out within the organization and with government agencies at the provincial and national levels. PTT has also joined organizations serving oil removal, such as Oil Spill Response & East Asia Response Limited (OSREL) and Oil Industry Environmental Safety Group (IESG), to collaborate and prepare for the event of marine oil spills in order to minimize potential impacts on environment and community, and to exchange knowledge and best practices on dealing with oil and chemical spills.

In 2016, there was only 1 occasion of oil and chemicals spill from PTT's operational areas into the environment with the volume between 1 and 100 barrels, and 1 occasion of oil spill with the volume of more than 100 barrels. Immediately after the incidents, PTT and the relevant government agencies collaborated to resolve problems in a timely manner by applying international practices to stop the oil spill. As a result, the incidents were managed and the impacts were minimized quickly. Furthermore, PTT improved its prevention plan to prevent accidents from recurring in the future. During transportation of products and raw materials, there were 2 occurrences of leakage. Accordingly, PTT analyzed the causes and determined ways to promptly get control of the situation and prevent reoccurrence.

Biodiversity

PTT Group's fundamental principle of biodiversity management is to prevent any damages and negative effects on biodiversity. Therefore, PTT analyzes and assesses risks to biodiversity before conducting the projects by considering a wide range of factors, including the location of the project according to the geographical environment, characteristics and types of activity, scope of operations, and severity of the risks in each phase of the project. For each project with a high level of risk, PTT must identify the area-specific action plan on biodiversity to mitigate potential impacts on vegetation, wildlife and environment. In 2016, PTT assessed biodiversity risks for all new projects, in which no high-risk area was found.



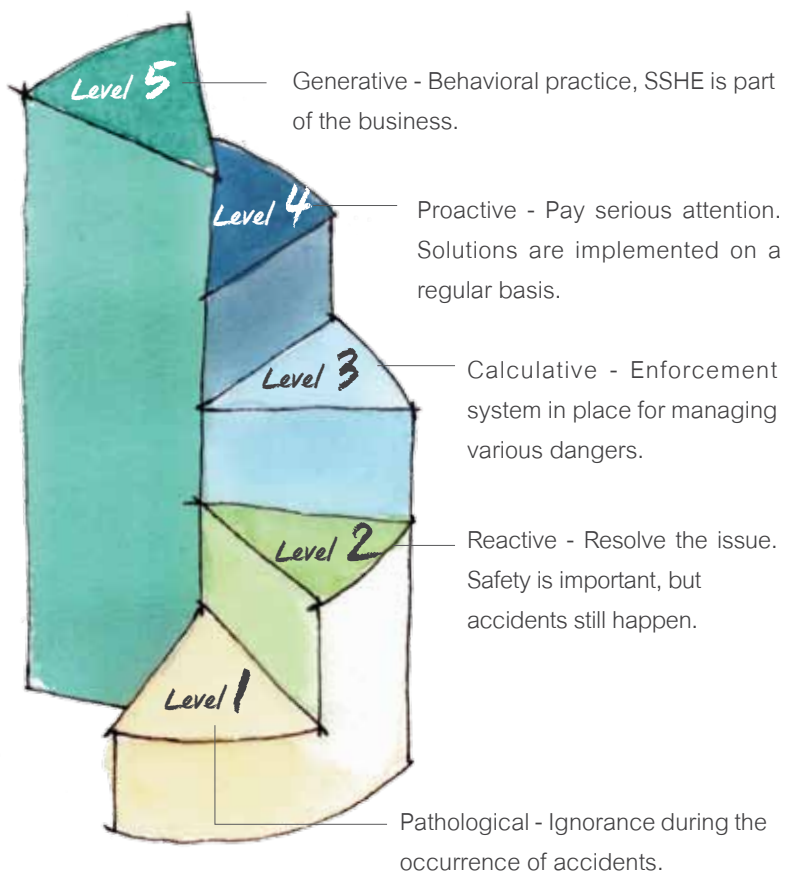
Safety and Occupational Health

PTT is committed to controlling and preventing safety risks, occupational health and environment in the workplace in compliance to laws, international standards and PTT Group's Quality, Security, Safety, Health and Environment (QSHE) Policy in order to reduce accidents and illness at work to zero in all areas of operation. This allows all personnel of PTT Group, including suppliers and contractors, to have the right to work in a safe environment and a good quality of life.

Health and Safety Culture

PTT raises awareness of safety and occupational health for employees at all levels through health and safety policy and practices, such as training and building deep understanding through activities and incentives, to encourage responsibility for security across the organization. In 2016, PTT Group QSHE Committee and PTT QSHE Committee determined the safety culture development as part of the lifestyle and the safety leadership development regarding the corporate safety operation framework 2017 - 2020. PTT deployed the PTT Group SSHE Culture Management Guideline based on the idea that safety culture is an important factor to operational excellence and zero accident. PTT has set up a process to develop the PTT Group's SSHE culture and has classified the SSHE culture into 5 levels.

Security, Safety, Health and Environment (SSHE) Culture Level



Based on the SSHE culture online survey in the past year, 1,074 PTT employees completed the survey. The results showed that the SSHE culture level at PTT is at the Calculative level (level 3) due to the enforcement of the danger management system by initiating safety culture development project in each operation areas, and proceeding the safety culture development project for each operational unit. Based on the survey results, PTT will establish a plan to elevate the SSHE culture in its operation next year.

PTT also integrated the SSHE principles into the term of agreement for suppliers and contractors to ensure that their operations meet PTT standard. PTT has recorded the suppliers' and contractors' performance on SSHE and evaluated their performance after job completion, to determine eligibility for procurement in the future.

Safety Culture in the Natural Gas Business Unit

Natural Gas Business Unit has fostered safety culture for employees and contractors using the principle of Incident and Injury Free (IIF). Its purpose is to focus on changing the safety behavior through practices, so that the workers are not injured and return home safely. PTT has considered promoting the safety culture principles to other business units by integrating IIF principles through these 5 following steps:



"Incident and Injury Free (IIF) is not only a performance indicator, but it is an extended relationship among all persons working together. Everyone should develop relationships between colleagues by listening more, talking to colleagues about their safety and well-being, appreciating safety implementation of the colleagues, and always expressing concern for others".

Mr. Methee Phoosri
Technical Supervisor, Division of Building Management & Maintenance
IIF Trainer

To monitor the safety performance, PTT has used a safety monitoring and analysis system to manage data, which enables the organization to understand the safety implementation trends and improvement opportunities for personal and process safety measures. The Near-miss Reporting System, for example, was developed in order to report on the case of near misses and actions or operating environment at a lower safety standard. All employees, who report into the system, are required to collaborate with their supervisors to monitor and resolve the reported cases. Reporting into the system is considered as one of employee's performance indicators, which encourages a shared responsibility to prevent accidents and unsafe operations. In 2016, PTT employees have reported 164 near-miss cases, which mostly occurred in operations and business units, posing risks on life, property, environment, operation disruption, and reputation.

Process Safety

To achieve the strategic target for zero Tier 1 process safety events in PTT Group, PTT has adopted the Process Safety Management (PSM) tool to design production process and maintain a proper safety management. In addition, PTT has also appointed the Process Safety Working Group, consisting of executives and employees in PTT Group, to promote the collaboration in the network through knowledge exchange on technical approaches for process safety control, learning from people who have experiences dealing with accidents and their suggestions on best practices, advice received from the related assessments and lessons learnt from the losses in PTT Group and from other industries. PTT has implemented a range of safety mechanisms, including an Operating Window, Management on Change, Pre-startup Safety Review (PSSR)

and Safety Critical Equipment, to prevent the impact of accidents on life, property and environment, and to enhance safety prevention mechanisms to avoid serious accidents.

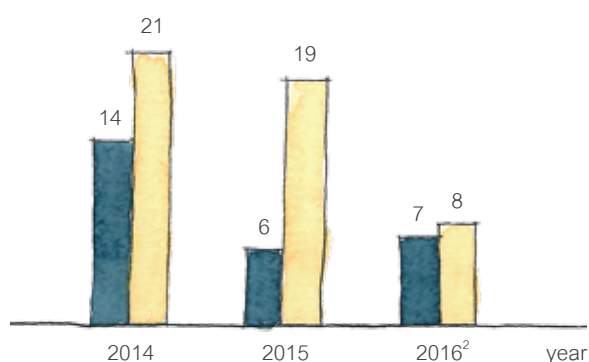
Moreover, PTT and other companies in the group have collected and analyzed the issues that cause safety process incidents in the industry segment, and have developed the PTT Group Process Safety Management Guideline. PTT has also continuously monitored and reported its safety performance. In 2016, PTT additionally defined process safety indicators and collected the safety performance for the Tier 3 and Tier 4 operations, and communicated with relevant persons on the selected indicators in the sub-group meeting as part of the Operational Excellence Management System (OEMS).



Number of PTT Group's Process Safety Events

(cases)

■ Tier 1 Process safety event¹
■ Tier 2 Process safety event



Remarks:

¹ The report on Tier 1 process safety events is in accordance to the Recommended Practice 754 of the American Petroleum Institute (API).

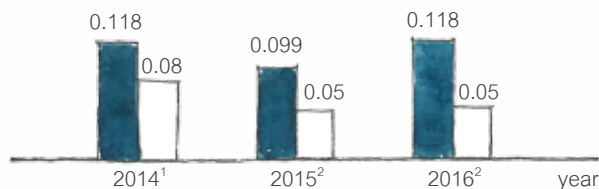
² In PTT, 2 process safety incidents occurred in Tier 1 operation and another 2 incidents in Tier 2. Those incidents in Tier 1 operation were classified as oil spillage during heavy fuel oil transfer to the ship and oil pressure gauge malfunction.



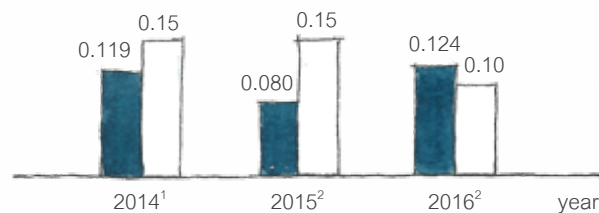
Total Recordable Injuries Rate (TRIR)

(person per 200,000 hours worked)

■ Performance □ Target



Employees



Contractors³

Remarks:

¹ The scope covers PTT, PTTEP, PTTGC, TOP, and IRPC.

² The scope covers PTT, PTTEP, PTTGC, TOP, IRPC, and GPSC. In 2015, there are 6 companies in total due to the performance of company GPSC has been included into the report.

³ Contractors refer to both supervised and independent contractors.

Security

As accidents and incidents always happen and significantly affect the security of critical organizational property, including buildings, reputation and personnel of the organization, the PTT Group Security Working Group has therefore established the PTT Group Security Management System and has developed standards, guidelines and handbooks that can be deployed in different operation areas in PTT Group, to encourage mutual security practice across the organization.

PTT analyzed and assessed security risks that might disrupt business continuity. The security risk assessment results in 2016 showed that the critical security risks for PTT were protest, crimes within the region, terrorism, etc.

To cope with such risks, PTT has established security measures in each area of operation, taking into account the principles of human rights, to prevent harm at every stage of the business operation, such as constantly organizing training courses on

negotiation and security awareness, etc. In addition, PTT has also audited the security management system of PTT Group in every operating area. The purpose of the audit is to check the completeness and appropriateness of the system, and the alignment with emergency and crisis management plan of PTT Group regarding the business continuity management system through emergency management.

In addition to security management within the organization, PTT has also coordinated and created a network with government agencies, for example police and military. PTT has collaborated with state-owned enterprises in order to jointly share knowledge, develop security-related management approaches, and coordinate for emergency assistance in the area. PTT has also improved security officer management system, including defining of qualification standard, security officer management structure, capacity building, etc.





Capital Project Management

Community and society represent the main stakeholders that are likely affected by PTT's operations. In order to minimize potential social and environmental impacts throughout a project's lifecycle – before, during, and post-development phases – PTT undertakes active engagement with communities surrounding its operational sites, conducts thorough environmental impact assessments, and fully manages community grievances. Furthermore, PTT strictly maintains quality and compliance with relevant laws, regulations, standards, and international practices, with the awareness that living in harmony with communities and the environment is an important foundation for sustainable growth.

Community Engagement

It is considered both a challenge and an opportunity for PTT to be able to foster energy security, while concurrently responding to increasing energy demand in the future from the electricity, industrial, and transportation sectors. Over the past year, the Energy Policy and Planning Committee of the Ministry of Energy granted PTT approval for initiation of the Onshore Gas Transmission Pipeline No. 5 and the Onshore Gas Transmission Pipeline No. 6 (Ratchaburi Gas Controlling Station – Wang Noi), as indicated in the Natural Gas Transmission and Infrastructure Plan for Energy Security. Both projects have undergone environmental impact assessments (EIA), the results of which have been reported to the Office of Natural Resources and Environmental Planning and Policy (ONEP) for their consideration and expert review by the National Environment Board. Interested parties may access the EIA reports through ONEP. Details of the projects are as follows.

Capital Projects in 2016



Onshore Gas Transmission Pipeline No.5

The pipeline passes through the following 8 provinces: Rayong, Chonburi, Chachoengsao, Prachinburi, Bangkok, Pathum Thani, Ayutthaya, and Nonthaburi. Construction is scheduled to begin during the third quarter of 2017, and for completion in 2020.



Onshore Gas Transmission Pipeline No.6 (Ratchaburi Gas Controlling Station – Wang Noi)

The pipeline originates from Gas Controlling Station No.6 (Ratchaburi – Wang Noi) in Sai Noi District, Nonthaburi, and ends at Gas Controlling Station No.10 of the Western Onshore Natural Gas Transmission Pipeline System, sourced from the Yadana Fields (Republic of the Union of Myanmar), in Chom Bueng District, Ratchaburi Province. The 119-km long pipeline will pass through 4 provinces: Nonthaburi, Nakhon Pathom, Ratchaburi, and Kanchanaburi.

In addition, PTT is currently in Phase 2 of the Onshore Gas Transmission Nakhon Ratchasima Project. Active public participation has been conducted in accordance with the Regulations of the Office of the Prime Minister B.E. 2548, as well as measures indicated in the project's environmental impact assessment. This has resulted in a Community Engagement Score of 4.00, exceeding the target of 3.40.

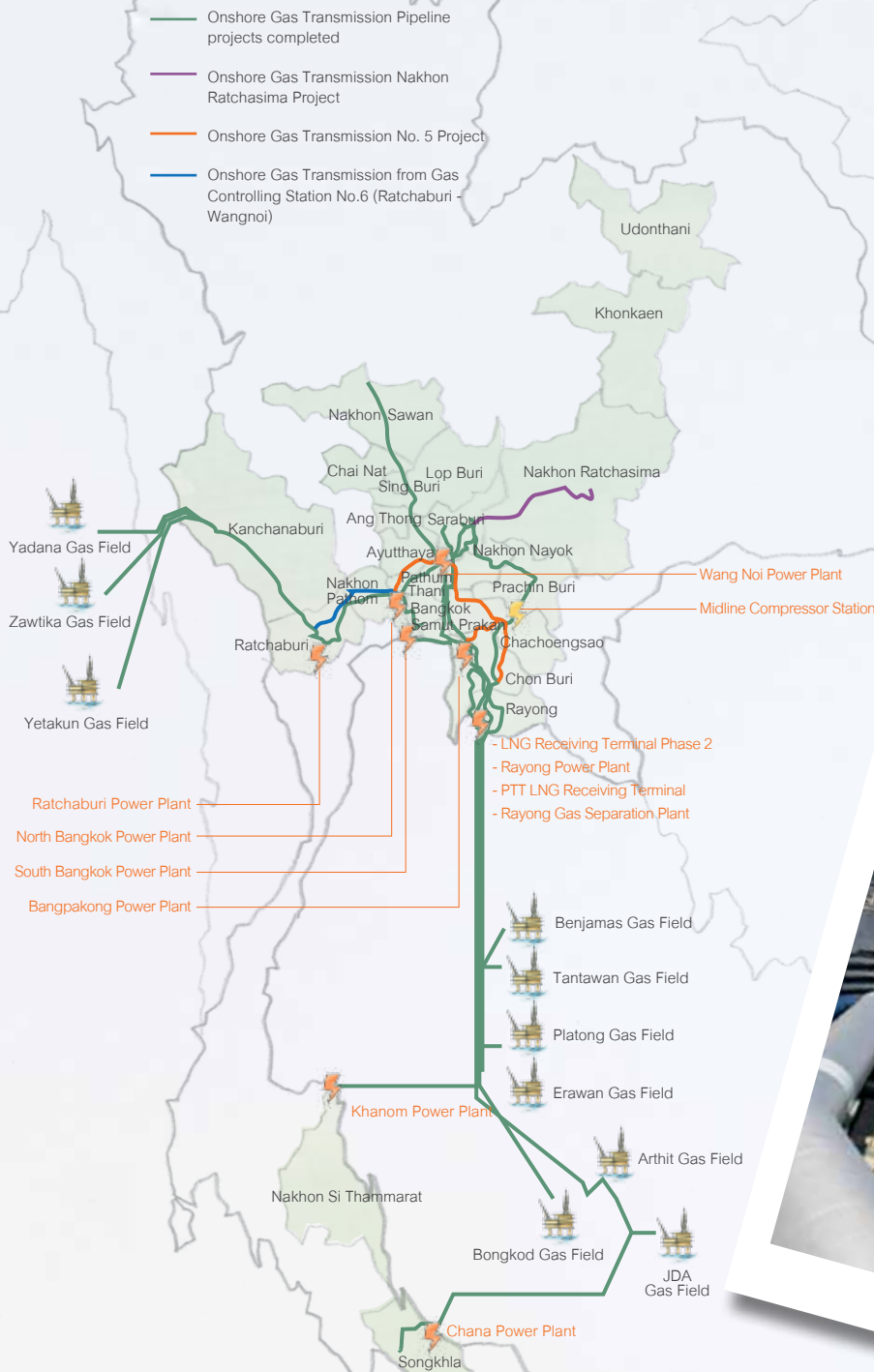
To proactively respond to stakeholders' expectations, PTT engages with stakeholders at all stages of project management by providing channels for community members and stakeholders to regularly express their opinions and grievances. Examples include the Project Coordination Center, Project Information Services, and through Public Relations Officers in the area. All grievances are fully investigated, and all information related to grievances and mitigation methods are used to develop further impact prevention measures. Effectiveness of community engagement is measured through the Community Engagement Score, with the target set for at least 60% of project acknowledgement and project acceptance by respondents surveyed during the EIA process. In 2016, project acknowledgement and acceptance by communities were 81.3% and 74.1%, respectively.



Community Consultations

37 Operations, accounting for 100% of total operations

35 Development projects, accounting for 100% of total projects



With respect to fundamental human rights and well-being for all, PTT avoids operating projects that would result in permanent community resettlement. Careful planning and design of construction routes ensure that PTT can avoid or minimize impacts to land use and property, and assure the highest level of community acceptance. Owing to such measures, PTT did not have any cases of community grievances or conflicts in 2016. No cases of community resettlements took place.

People



"PTT recognizes the importance of its human capital and employee capacity building, while creating a learning organization in order to build a strong foundation for the successful attainment of its vision and mission to be the Pride and Treasure of Thailand."



1.7% of spending on
employee training
to total employee spending



35,168.35 baht per person
for the average spending on
employee training



4,280.35 million baht
of value creation from
internal knowledge sharing



68.40

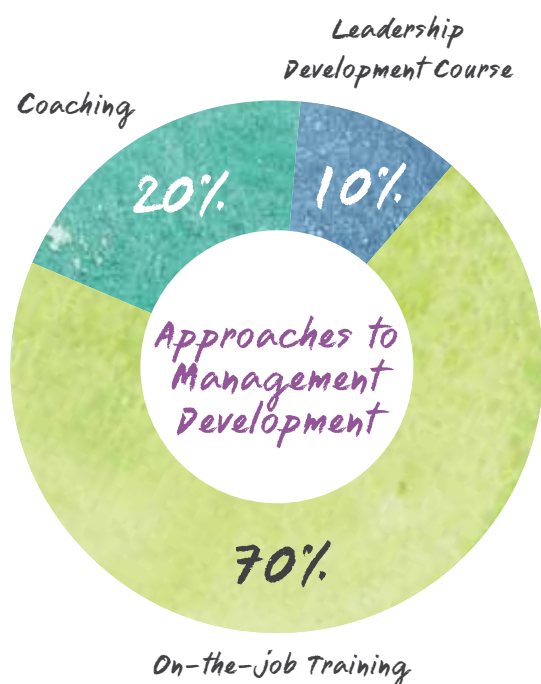
*average training hours per year
per employee (level 10 down)*

Human Capital Development

PTT applies a career management framework comprising 17 Career Paths, applicable to both management and employee levels, to retain and develop human capital in a manner suited to the specific requirements of each career path. At the employee level, the Career Counseling Team (CCT), together with the Human Resource Committee (HRC) are responsible for developing employee career models, which consist of (1) Capability Cluster, and (2) Success Profiles. The latter comprises 4 components: capability level, knowledge requirement, experience, and specific qualities needed in carrying out the specified duties. All employees must work with their Line Managers in evaluating their performance according to their career paths, and formulate an Individual Development Plan (IDP) to ensure continuous development. In 2016, a total of 81.22% of all employees have completed their IDP.

At the management level, PTT implements a succession plan for management and leaders, and has initiated the Global Leadership Development Plan with the aim to prepare a capable Leadership Pool ready to assume targeted positions. The Leadership Pool is divided into 2 groups according to their capabilities and experiences. The first group consists of "Versatile" Management who would be able to demonstrate growth in a variety of positions, and are capable of responding to business expansion and rapidly changing business environments. The second group, "Experienced," refers to individuals who are specialized in each business.

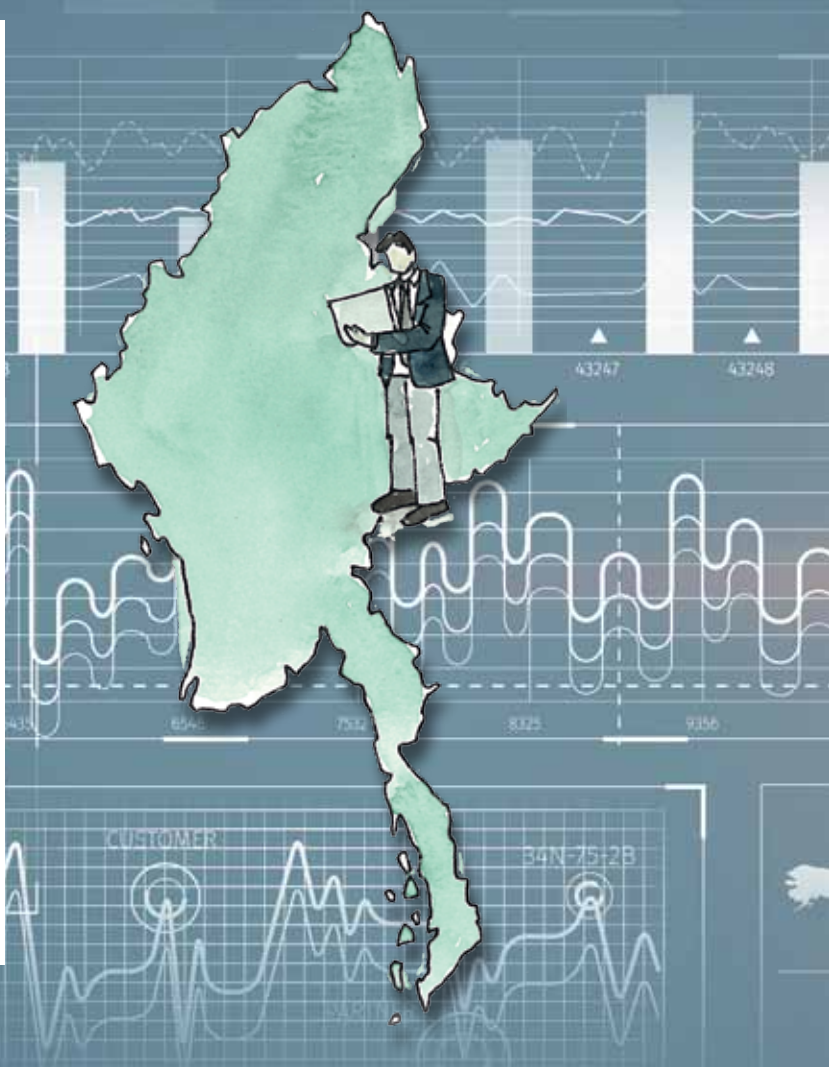
PTT has also promoted leadership development for those on the management career paths, such as through the Leadership Development Program, and provides coaching and recommendations from experienced individuals and line managers. Furthermore, it includes on-the-job training, which involves the designation of specific responsibilities or project management duties to participants. Progress and results of management development are consistently monitored and reviewed against the expectations of the next career level.



For the development of the new generation of employees, PTT has selected individuals from each career path for the “Potential Pool,” as an approach to efficiently prepare for business expansion. In particular, this focuses on employees who demonstrate expertise in energy and management of petroleum and petrochemical supply chain systems. For example, the “Young People to Global (YP2G)” Project, which aims to prepare the new generation of employees for international work responsibilities, will cultivate “Next Generation Leaders” through challenging on-the-job training. Such training involves undertaking new work and working under constantly changing environments and challenging obstacles, as well as carrying out responsibilities in unfamiliar settings. Employees receiving training under such circumstances are thus propelled towards the Fast Track Career Path. The organization is also developing an appropriate system for assessment and recommendation for the aforementioned objective. Results from the YP2G program in 2016 indicate that PTT now has a high proportion of employees with talent readiness for international positions – 100% and 80% from the first and second groups of employees trained, respectively.

YP2G Project

In 2016, an employee from the YP2G Program received the opportunity to work for PTT Oil Myanmar Company Limited (PTTOM) in the Republic of the Union of Myanmar. The employee’s primary responsibility was as an Acting Sales & Marketing Manager, responsible for business development planning through the analysis of Myanmar’s petroleum market. In addition, responsibilities also involved engagement in technical and engineering work; stakeholder management for all sectors in support of oil business expansion in Myanmar – from customers to governmental agencies, and fostering positive relations with all involved parties. Following the employee’s participation in the program, PTTOM was able to generate additional revenue of approximately 500,000 USD, an increase from 300,000 USD, and reduce costs from hiring external consultants by at least 5-10 million baht.



“The YP2G Program provided me with the challenging opportunity to work with PTT Oil Myanmar Co., Ltd. I was able to gain experience in Business Development, Sales and Marketing, and Engineering and Operations, which allowed me to develop my own capacity substantially. I would consider it a once in a lifetime experience. What I’m most proud of is my contribution to creating higher revenue for the company, and the opportunity to work with specialists who gave me so much insight and advice on oil business development.”

Mr. Thien Thanapornpun
Acting Sales & Marketing Manager
PTT Oil Myanmar Company Limited



Recruitment

PTT recruits talents from both inside and outside the organization in order to build up a capable workforce suitable to the needs of each position and context in which PTT conducts business. Internal recruitment is prioritized as a means to offer employees diverse development opportunities, to stimulate the rotation of individuals in full possession of qualities matching specific career path requirements, and to foster employee understanding of the organization’s SPIRIT values. Given this, the recruitment rate will increase or decrease according to business need at a particular time.

External recruitment, in the meantime, remains an important process to fulfilling specific career path needs and to maintain the balance between genders, and new and existing employees. PTT considers language skills as one of the core capabilities in recruiting applicants, and also focuses on recruiting for new technology and innovation positions.



Knowledge Management

PTT has established the target to become a learning organization by 2020, and to cultivate a true innovation culture within the organization. Doing so not only creates competitive advantage for the business, but also allows for the organization to apply its knowledge and capabilities in responding to constantly evolving industry and stakeholder needs. This includes, for instance, expectations for environmentally-friendly products and services, and support for sustainable development.



With that target in mind, PTT thus developed the “Voice of Customer (VoC) to Idea Generation” System as part of the PTT Group Knowledge Management System (BRIGHT), to compile recommendations from PTT Group customers into a foundational database, which employees may build upon in the development of innovations, services, or new work processes. This approach will enable PTT to directly respond to customer expectations, resulting in higher customer satisfaction. More importantly, PTT employees are encouraged to have a direct role in formulating new innovations that can deliver business benefits.

Apart from the above, PTT also develops training courses for employees that are reflective of various sustainability trends, ensuring that knowledge and mindsets on innovation will be disseminated to PTT employees. Examples include:

- Sustainability Management Training: Creating a knowledge foundation on sustainability management for employees and management, to enable awareness and understanding of the value of sustainability for business, society, and the environment, so that sustainability may be applied to work as appropriate.
- Innovation Training: Consisting of courses such as Practical Innovation and Advanced Practical Innovation, to promote innovation within the organization and support sustainable business growth.
- Train the Trainer Course: Developing internal trainers to share knowledge, experiences, and expertise within the organization.
- Other courses, such as Scenario Planning and Portfolio Management and Corporate Governance, which uses internal PTT trainers to share knowledge, experiences, and expertise to other employees.

Creating a Welcoming Organization

PTT strives to care for and retain its employees over the long-term by creating a welcoming organization. This starts, first, from instilling a strong organizational culture through the SPIRIT Values, which serve as shaping forces for management and employees in becoming good and capable individuals, exhibiting responsibility towards both the organization and society. Moreover, it involves building employee engagement, closely responding to employee expectations, providing continuous learning opportunities for employees, and ensuring fundamental rights entitled to all.

Creating Employee Engagement

Based on results from the employee engagement survey, PTT found that 99% of employees participated in the survey – higher than the participation rate in 2015. However, the employee engagement score reduced from 4.22 in 2015 to 4.17 in 2016 compared to the 4.22 target. This was due to the volatility in the oil price crisis, which resulted in shifts in management models under various aspects, and which reflected upon employee perception and concern over job security. To resolve the issue appropriately, PTT conducted an analysis of employee needs and concerns at each career level, separating results by gender, age, career level, business group, and operational area. PTT further included additional components into its Employee Engagement Model, and adjusted the level of analysis to enable a more accurate representation of engaged and disengaged employees. In relation to this, PTT organized an Employee Engagement Improvement Workshop for each career path, allowing for management and employees from each career path to collaborate in resolving issues impacting upon employee satisfaction and engagement, and to formulate clear action plans for issue mitigation.

At present, the proportion of employees in 'Generation Y (Gen Y)' at PTT is steadily increasing, and this represents another challenge in fostering engagement among Gen Y employees who are the driving force of the organization. PTT has initiated the PTT Reunion Project specifically with the objective to provide a platform for the organization to receive feedback on perspectives, problems, and recommendations from employees who have approximately 3-5 years of work experience, and is committed to promoting an understanding of the diverse work experiences of each generation of employees. Owing to this, PTT has been able to acknowledge new viewpoints on work, and gather recommendations to resolve problems based on the perspectives of the new generation. As a

result of this project, Gen Y employees have demonstrated a greater understanding of their working responsibilities, and are able to work smoothly with colleagues and line managers of diverse age groups.

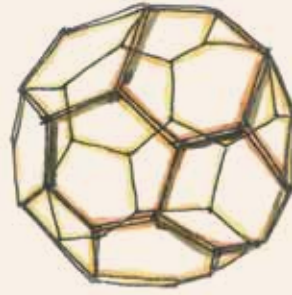
Labor Practices

PTT highly respects the rights in which employees are entitled to a secure and safe working environment, free from any forms of violence and discrimination. Guided by the conviction to care for and protect all personnel, from employees and management to suppliers, partners, contractors, and communities surrounding operations, PTT works to prevent the violation of fundamental rights and related human rights issues – whether this covers labor freedom, child labor, compensation and benefits, working hours, equal treatment, lay-offs, humanity, or freedom of labor association and unionization. Currently, 2,949 PTT employees are members of PTT's labor union, or 63.96% of total employees.

PTT communicates and receives feedback on PTT Group's labor practices through various channels, such as the Intranet and Human Resources System; employee and management representatives from the PTT Corporate Relations Committee, and the Joint Consultant Committee (JCC). Not only that, PTT requires all new employees to undergo human rights training as part of the orientation curriculum every year, where in 2016 a total of 195 new employees received human rights training (a total of 100%).

Furthermore, PTT closely monitors and investigates all grievances and recommendations. The privacy of all complainants is maintained during investigations to ensure that all employee opinions are received and responded to. Over the past year, there were no cases of human rights violations or incidents of discrimination within the organization.

Corporate Citizenship



“Guided by His Majesty the King Bhumibol Adulyadej’s Sufficiency Economy Philosophy, PTT collaborates with the government, private sector, and communities to build a strong foundation for self-sufficiency and a sustainable future for the country through social and environmental development activities.”



1,026 tonnes of CO₂
reduced by community energy
self-reliance program



1.93 million tonnes CO₂
absorption capacity from
forest conservation and recovery



34,238 hours
of total employee volunteering
outside working hours



PTT is fully aware of the challenges on climate change and the importance of economic development for societal self-sufficiency and sustainability. Therefore, PTT is determined to reduce climate change impacts by increasing the greenspace which serves as carbon sink. Moreover, PTT supports science and technology education programs to produce quality researchers, who will be the driving force for the national sustainable development. In addition, PTT has strengthened communities' ability to become energy self-sufficiency regarding Thailand 4.0 Model, aiming to develop innovative and technological driven economy. PTT has continued its social and environment development activities and has initiated approximately 40 new development projects with the collaboration of PTT's foundations and public-benefit corporation network. PTT's corporate citizenship activities focus on 3 main areas: Natural Resource Conservation, Human Resource Development, and Community and Social Development. The total budget for corporate citizenship activities was 918.77 million baht, in which 9.15% was for commercial initiatives, 38.33% was for social investment, and 52.52% was for charitable donations.

For more information on PTT's community projects, please visit <http://csr.pttplc.com>

Community Engagement

In response to the communities' expectations and concerns from PTT's operational direct and indirect impacts, PTT engages with the communities, following the Community Development and Community Relations Guidebook (CD-CR). This engagement approach allows PTT to hear public opinions and involve the communities in the decision-making and problem-solving processes. The engagement starts with the assessment of potential impacts from PTT's operations and activities. Then, PTT identifies the level of stakeholder's interests and influences on PTT projects to determine appropriate engagement measure for each community group. It is necessary for community engagement to consider the differences in context, impacts, and project's objectives for each community group. PTT collaborates with internal and external parties to systematically collect the performance data of all community development projects for progress monitoring, performance assessment and further improvement of the projects.

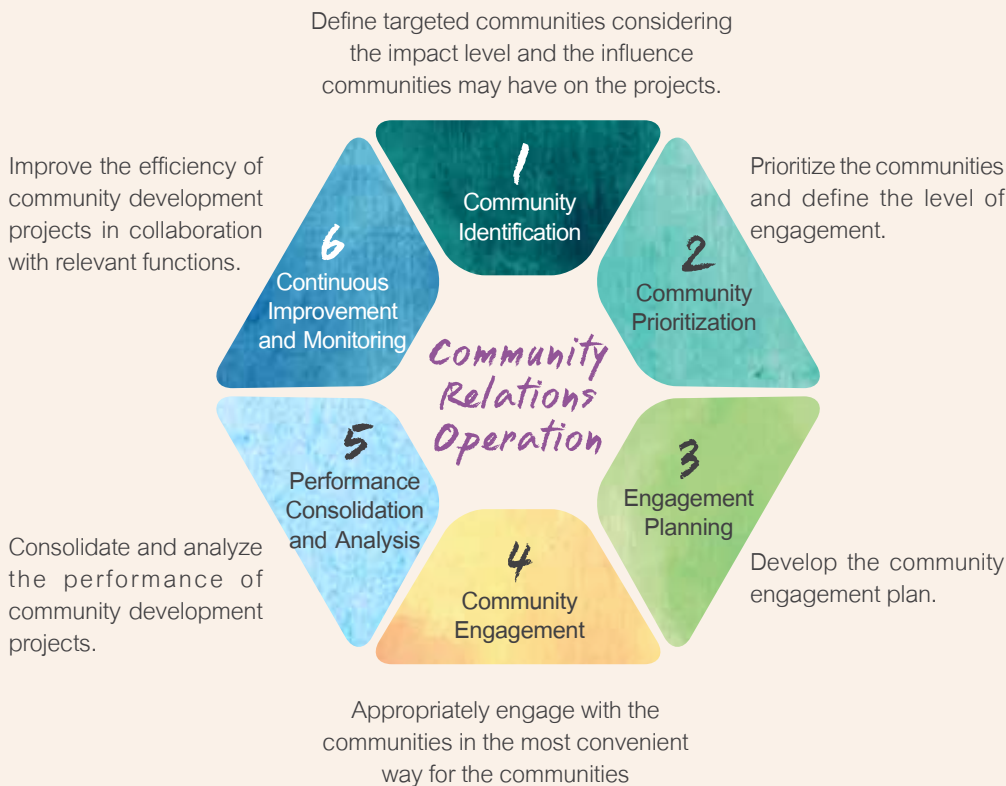
Total Budget for Social and Community Development
(million baht)



Remarks:

- Total budget in 2016 was lower than 2014 and 2015 due to the implementation of productivity improvement in compliance with PTT's policy and strategy to enhance cost efficiency.
- In 2014-2015, the initial investment costs for the commissioning of the Wang Chan Forest Project and PTT Green in the City Project were significantly higher. In 2016, the budget of these 2 projects was mainly allocated for forest preservation and maintenance costs.

Community relations operation consists of 6 steps as follows:



90.02%
of communities
surrounding PTT's
operational areas
were satisfied with
PTT community
engagement programs.

Livable City

PTT has engaged with the communities and all relevant parties through forums, working group meetings, sub-group meetings, and workshops to gather opinions from all stakeholders, following the CD-CR Guidebook, for the implementation of the Livable City Project. The objective of the project is to promote the development of the communities' livelihood surrounding PTT's operational areas in social, economic, health and environmental aspects. In 2016, PTT established community development activities in different areas, such as:



Livable City Project

Songkhla Petroleum Terminal neighbourhood:

Singhanakorn District is shaped to become a historical tourist attraction and a clean town with job opportunities. "Seaside Working Street" activity is implemented where communities sell their local products, food and handicrafts. There were 200 merchants joining this street market and generated approximately 100,000 baht in total for each event.



Health Promotion Project

Gas Transmission Operation Center 4 neighborhood:

In response to the lack of health knowledge and access to health care services, PTT launched Health Promotion Project for Baan Kam Yai Pan Nam Chai Community, Muang Waan Sub-district, Khon Kaen Province for 250 households.



Job Creation Project

Gas Transmission Operation Center 6 neighborhood:

To resolve the unemployment problem and inadequate household income at Moo Pai Community, Pathum Thani Province, PTT encouraged community to grow lung oyster mushroom, generating 5,000 baht as a total income with 56 households participated in this project.

Human Resource Development

PTT places a high emphasis on developing human resources as an essential factor for the development of the country. PTT has therefore dedicated its efforts to strengthening education system by improving educational structure, providing educational opportunities, fostering creativity and enhancement of skills, and moral improvement for youth. PTT uses its knowledge and expertise in science and technology to improve the education system in collaboration with local agencies, government, private sector and relevant education networks.

Vidyasirimedhi Institute of Science and Technology (VISTEC) and Kamneotvidya Science Academy (KVIS)

To encourage science, technology, and innovation, PTT established the Power of Innovation Foundation responsible for the management of VISTEC, to produce human capital for research, promote the innovation research and development in responding to the needs of the country, and support job creation in the science field. The Power of Learning Foundation, responsible for the management of KVIS, has created educational opportunities, provided society with beneficial academic services, and fostered scientific and technological curiosity in youth. For more information on VISTEC and KVIS, please visit www.vistec.ac.th and www.kvis.ac.th.



In 2016, the Power of Learning Foundation and the Ministry of Science and Technology organized the “Youth Greenovation Awards 2016” opened for all students from all levels to compete for a trophy from Her Royal Highness Princess Maha Chakri Sirindhorn. All participants were encouraged to demonstrate their creativity in inventing green and practical inventions with the opportunity to add more value to Startups and Social Enterprise projects. There were 146 innovative projects submitted from around the country.

Moreover, PTT still supports the “Petro Camp to Champ Petro” Youth Camp for the 11th year. High school students are selected to join the youth camp to learn more about petroleum science and environment through workshop activities. Some of the participants were granted scholarships to study at the Department of Chemical Engineering and Environmental Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi.

VISTEC



87 graduate students
and PhD students enrolled
from 2 academic years

KVIS



144 high school students
enrolled from 2 academic years



2,637 students from
around the country combined with
the selected participants from
“Petro Camp to Champ Petro”
Youth Camp were awarded
with scholarships, a total of
14.25 million baht,
and the selected participants
from Youth Camp were accepted
to King Mongkut's University of
Technology Thonburi.

Community and Social Development

PTT encourages communities to become resilient, sustainable and self-sufficient, as defined by the sufficiency economy philosophy. In supporting the development of communities to become energy self-reliance, PTT helps sharing its knowledge and expertise on energy technology to the communities.

Community Energy Development

To support communities in becoming energy self-sufficient, PTT has continuously developed energy development projects for communities with the awareness of energy scarcity as a critical problem. Hence, renewable energy has been developed to replace the use of fossil fuels. In collaboration with Tha Manao Community, community biogas system from pig farming has been implemented and operated since 2015. Currently, Tha Manao Biogas System was registered as a Thailand Voluntary Emission Reduction Program (T-VER) project in the waste management project category.

In 2016, PTT extended the scope of community biogas system to 2 more locations; Kham Khaen Sub-district, Manchakhiri District, Khon Khaen Province and San Sai Sub-district, Phrao District, Chiang Mai Province. The objective was to create the role model for community energy management system. PTT maintains engagement with communities and relevant stakeholders in every stage of the project in order to promote a mutual understanding, earn acceptance from communities, and, above all, maximize values for communities.

Performance



Tha Manao Biogas System, Lopburi Province (2015 - present)

- Registered as a T-VER project in 2016 with carbon credit period of 7 years and CO₂ capture capacity of 786 tonnes CO₂ equivalents per year.



Kham Khaen Biogas System, Khon Khaen Province (2016 - present)

- Organized community forums and nominated Environment Committee in order to define management framework, support communities on environmental health management, promote understanding and to earn acceptance from communities.
- Collaborated with Mahasarakham University in constructing the biogas system and assessing its performance.
- Established the renewable energy learning center in the north-eastern region as part of One Village One Project.
- Reduces distinctive smell and wastewater from pig farming.
- Reduces 210 tonnes CO₂ equivalents per year.
- Produces biogas for use in 26 households as substitute for LPG and charcoal and helps the community to save approximately 280,800 baht per year.
- Earns 35,000 baht per year from selling dried pig manure.



San Sai Biogas System, Chiang Mai Province (2016 - present)

- Nominated Biogas Committee in order to maintain and manage biogas consumption in the community.
- Collaborated with Rajamangala University of Technology Lanna in studying biogas system efficiency.
- Produces biogas for use in 32 households and one temple as substitute for LPG and charcoal. This project results in the reduction of 15 kilograms of LPG consumption per households, which means saving approximately 161,280 baht per year.

"We create value and reduce cost by utilizing our wastewater from pig farming. We substitute 100% of LPG with our biogas, which, at the same time, produce liquid and granular fertilizers. This proves to be beneficial to us and the communities."

Mr. Panya Upatump

Pig Farm Owner in Kham Khaen, Manchakhiri, Khon Khaen

Energy Training Course

In order to integrate the Sufficiency Economy Philosophy in community energy management, PTT organized the 3rd Community Energy Training course for 68 community leaders. Apart from that, the participants from the 1st and 2nd Training Course in 2015 have developed systematic energy management into practices using local resources as an energy source. For example, the community in Bhiman Sub-district, Na Kae District, Nakhon Phanom Province extracted fuel oil from gurjan tree, as a substitute for fuel oil, and used gurjan oil for agricultural machineries and oil lamps. Another project promotes solar energy in Khao Kok Sub-district, Prakhon Chai District, Buri Ram Province. The solar energy from this system was used for water pumps, resulting in savings of 7,200 baht per year. This community also added value to its agricultural waste, cassava roots and iron wood, by making charcoal from those waste. The charcoal was used as an alternative energy source.

"Energy Training Course helped us understand the whole picture and current energy trends in relation to daily energy consumption of our community. We also learned to properly implement renewable energy system coupled with the Sufficiency Economy Philosophy into our energy management system"

Mr. Subhap Sribha

Training Participant

From Khao Kok, Prakhon, Buri Ram

In response to the government's policy on the development of economic foundation through Social Enterprise and job creation, PTT collaborated with government agencies allocating the area in 148 PTT gas stations for local product shops without rental fee for three years. This project helps communities promote their local tourist and signature products of high quality, resulting in income generation and distribution in local communities. Apart from that, PTT also supported the government's policy on rice price support by jointly launching rice-selling programs to allow farmers to sell rice at PTT gas stations nationwide.

Aside from its contribution to society as an organization, PTT has also consistently bolstered its executives' and employees' values for volunteering activities. Organization of such activities allows all employees to participate and make contributions to society as their capacity allows, such as the Khun Chang Chub Meu Project, in which an elephant-shaped doll made from clothes becomes a physical therapy tool for patients with paresis, paralysis, and ALS (Amyotrophic Lateral Sclerosis) across the country; Type for the Blind Project and Read for the Blind Project, which publishes braille books and audio books for those with visual impairment. The books are then donated to the Foundation for the Blind in Thailand under the Royal Patronage of Her Majesty the Queen and Thailand Association of the Blind.



Natural Resource Conservation

PTT collaborates with communities and networks from all sectors for the revival and conservation of natural resources in all operational and other areas across the country. This effort must be done along with building awareness of natural resource conservation through essential projects, such as Sirinart Rajini Ecosystem Center for Mangrove Forestation, and the Royal Project for the Development and Promotion of Vetiver grass. This includes operations accomplished via PTT Reforestation Institute, which consistently works to preserve forest and build up knowledge of reforestation to the public. This raises consciousness of forest conservation, alongside with local community engagement. Additionally, the Green Globe Institute also makes significant impacts through its expansion of conservation networks and knowledge management with respect to natural resource conservation and sustainable environment.

PTT Reforestation Institute

PTT Group continues its mission to maintain the 160,000 hectares forest area planted in honor of the 50th anniversary of His Majesty the King Bhumibol Adulyadej's ascension to the throne. In 2016, the total forest area was approximately 193,000 hectares with the carbon dioxide absorbing capability of 1.93 million tons, in comparison to 2024 target of 2.1 million tons of carbon dioxide absorption.

For more information, please visit
www.pttreforestation.com

Learning Center - PTT Reforestation Institute

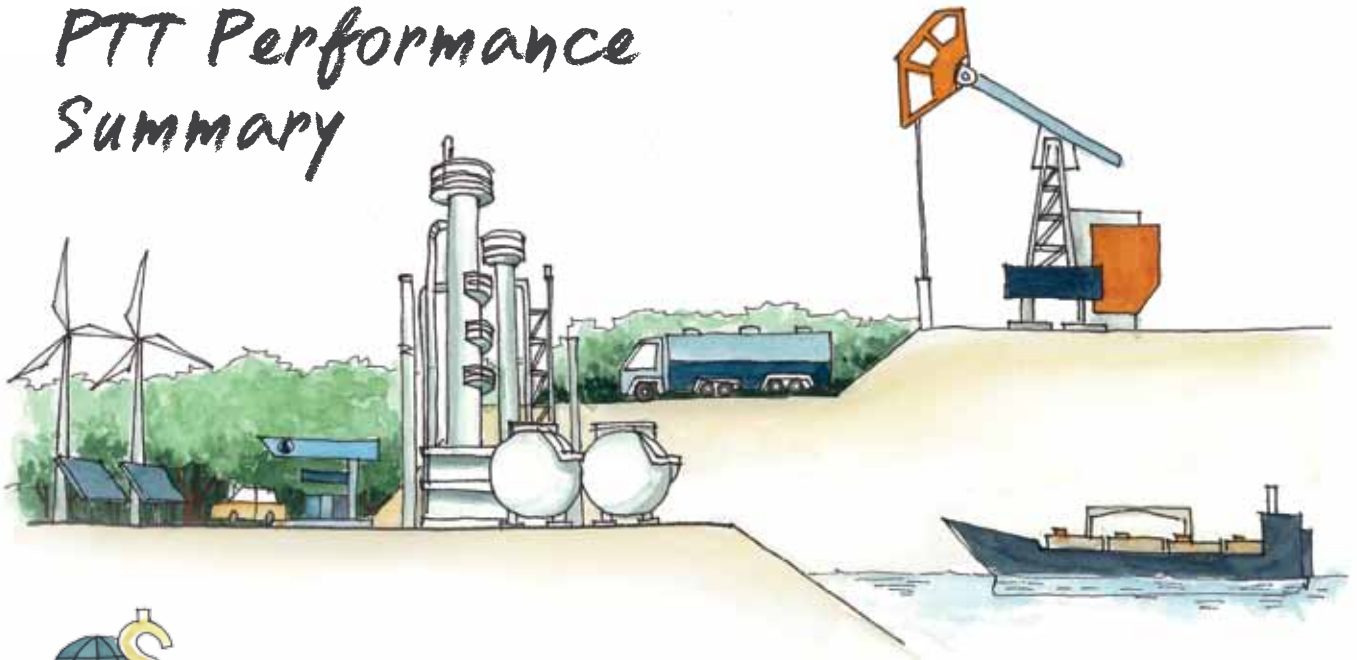
PTT established an integrated learning center on forestry and forest restoration, serving as a public resource for education.

- Wang Chan Forest, Wang Chan District, Rayong Province: total of 23,776 visitors in the past year. This learning center worked together with Kasetsart University to conduct collaborative research on forest management and reforestation.
- PTT Green in the City, Sukhaphiban 2 Road, Prawet, Bangkok: total of 71,724 visitors in the past year.
- Sirinart Rajini Ecosystem Center for Mangrove Forestation, Prachuap Khiri Khan Province: to transform an abandoned shrimp farm into a role model for mangrove ecosystem management. This learning center organizes a natural classroom project for knowledge transfer of mangrove ecosystem to students in surrounding area and visitors. Up until now, 42,665 visitors have visited to Sirinart Rajini Ecosystem Center. Aside from being a learning center, this place also creates value to the local community through oyster fishery and local tourism, which generated an income of 32,697 baht and 208,209 baht, respectively.

Green Space Recovery

In response to the Royal Address of His Majesty the Late King, PTT Group initiated the ecosystem preservation and the development of green area of Bang Kachao area, Phra Pradaeng, Samut Prakan Province. This land of an approximately 1,900 hectares is known as the Best Urban Oasis of Asia which has been rehabilitated as a green space and green lung for Bangkok metropolitan. PTT signed an agreement to develop and rehabilitate green spaces at His Majesty the King Bhumibol Adulyadej's 80th Birthday Anniversary Park in collaboration with the Royal Forest Department and Kasetsart University. The intention was to transform this place into a natural learning center at the Chao Phraya River Basin. Apart from that, this project can also prevent shoreline erosion of the 6.08-hectare of the pilot project along the Chao Phraya River.

PTT Performance Summary



Economics

GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EC1	Sales revenues	Million baht	2,605,062	2,025,552 ²	1,718,846
	Operating costs	Million baht	2,374,014	1,802,311 ²	1,463,043
	Employee wages and benefits ¹	Million baht	8,785	8,792	9,651
	Dividend payments for the performance of the year	Million baht	31,401	28,561	17,136 ³
	Payments to government	Million baht	3,772	4,003	9,073
G4-EC4	Tax privileges from the Board of Investment, Thailand	Million baht	6,315	3,727 ²	4,030

Remarks:

¹ Employee wages and benefits 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 the Chief Executive Officer and top executives. Employee wages and benefits include salaries, bonuses, contributions to provident funds, etc. (if applicable).

² Revised numbers in 2015.

³ 2016 Interim dividends payment





People

GRI	Required Data	Unit	2014		2015		2016	
			Male	Female	Male	Female	Male	Female
G4-10	Permanent employees	Manpower	3,009	1,507	3,083	1,577	3,052	1,564
	Outsourced workers ¹	Manpower	2,029		2,113		2,089	
	Workforce ²	Manpower	6,545		6,773		6,705	
	Employees by area							
	• Bangkok	Manpower	1,593	1,313	1,594	1,361	1,560	1,348
	• Others ³	Manpower	1,370	181	1,442	200	1,448	201
	• Overseas	Manpower	46 ⁴	13 ⁴	47 ⁵	16 ⁵	44 ⁶	15 ⁶
G4-LA12	Employees by age							
	• Over 50 years old	Manpower	677	341	652	331	606	331
	• 30-50 years old	Manpower	1,665	837	1,729	900	1,811	936
	• Below 30 years old	Manpower	667	329	702	346	635	297
	Employees by level ⁷							
	• Executive (Level 14-19)	Manpower	141	58	141	67	147	66
	• Middle management (Level 11-13)	Manpower	342	240	343	257	346	274
	• Senior (Level 9-10)	Manpower	812	470	842	462	856	462
G4-LA1	• Employee (Level 8 and below)	Manpower	1,714	739	1,757	791	1,703	762
	Total new employees	Manpower	270		305		149	
	New employees	Manpower	154	116	177	128	90	59
	New hire rate	%	5.12	7.70	5.74	8.12	2.95	3.77
	New employees by area							
	• Bangkok	Manpower	114	95	94	110	62	53
		%	3.79	6.30	3.05	6.98	2.03	3.39
	• Others ³	Manpower	40	21	83	18	27	6
		%	1.33	1.39	2.69	1.14	0.88	0.38
	New employees by age							
	• Over 50 years old	Manpower	2	0	0	0	2	1
		%	0.07	0.00	0.00	0.00	0.07	0.06
	• 30-50 years old	Manpower	22	19	11	14	5	8
		%	0.01	0.01	0.36	0.89	0.16	0.51
	• Below 30 years old	Manpower	130	97	166	114	83	50
		%	4.32	6.44	5.38	7.23	5.32	3.71
	Total employee turnover	Manpower	136		158		76	
	Employee turnover	Manpower	89	47	103	55	38	38
	Employee turnover rate	%	2.96	3.12	3.34	3.49	1.25	2.43
	Employee turnover by area							
	• Bangkok	Manpower	67	47	26	22	26	33
		%	2.23	3.12	0.84	1.40	1	2.11
	• Others ³	Manpower	25	1	7	1	12	5
%		0.83	0.07	0.23	0.06	0.39	0.32	

GRI	Required Data	Unit	2014		2015		2016	
			Male	Female	Male	Female	Male	Female
	Employee turnover by age							
	• Over 50 years old	Manpower	64	25	70	32	0	0
		%	2.13	1.66	2.27	2.03	0.00	0.00
	• 30-50 years old	Manpower	18	18	14	11	19	17
		%	0.60	1.19	0.45	0.70	0.62	1.09
	• Below 30 years old	Manpower	10	5	19	12	19	21
		%	0.33	0.33	0.62	0.76	0.62	1.34
G4-LA3	Number of employees entitled to parental leave	Manpower	3,009	1,507	3,083	1,577	3,052	1,564
	Number of employees taking parental leave	Manpower	0	27	0	38	70	47
	Number of employees returning to work after parental leave	Manpower	0	27	0	38	70	47
	Number of employees returning to work after parental leave who are still employed for the next 12 months	Manpower	0	25	0	36	69	46
	Retention rate	%	0.00	92.59	0.00	94.74	98.57	97.87
G4-LA9	Average hours of training per employee ⁸	Hour per employee	32.44	39.15	48.84	64.06	54.04	89.95

Remarks:

¹ Outsourced workers refers to contractors who deliver tasks specified in the annual TOR and do not include short-term outsourced workers during the year e.g., sub-contractors, consultants, housekeepers, etc.

² Workforce = Permanent employees + Outsourced workers.

³ Others refers to other provinces outside Bangkok where PTT's offices are situated.

⁴ Including employees working abroad in Cambodia, China, UAE, Laos, Myanmar, Malaysia, the Philippines, Singapore

⁵ Including employees working abroad in Cambodia, Laos, Myanmar, Malaysia, the Philippines, Singapore, Indonesia

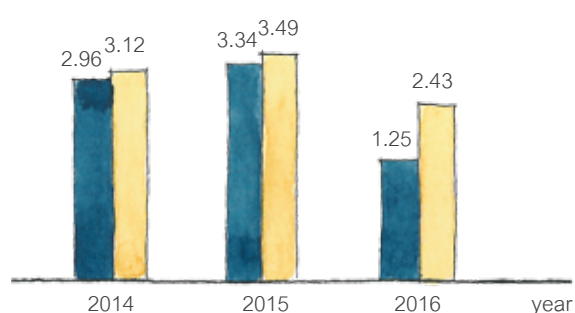
⁶ Including employees working abroad in Cambodia, Laos, Myanmar, Malaysia, the Philippines, Singapore, Indonesia, England

⁷ Employee level numbering is adjusted in 2016 in order to standardize throughout PTT Group

⁸ Hours of training and further study are included in the average hours of training per year per employee.

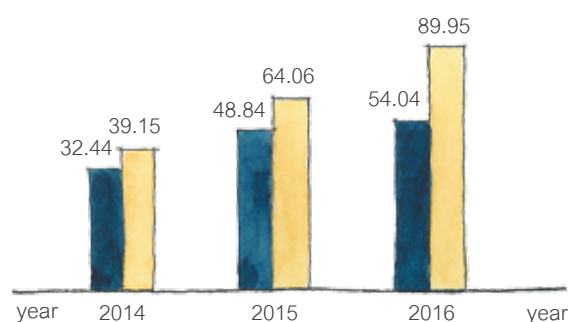
Employee turnover rate

(%) Male Female



Average hours of training per employee

(hour per employee) Male Female





Environment

Reporting Scope	Year	PTT Operated Business													2016 Coverage (%)
		PTT Building				Gas Separation Plant (GSP)	Gas Transmission (GTM)	Terminal			Retail	Lubrication	Transportation	NGV Service Stations	
		Head Office	Prakanong Office	Research & Technology Institute	Rayong Office			Gas Terminal	Oil Terminal	Aviation					
Direct GHG emissions (Scope 1)	2016	●	●	●	NA	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	NA	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	NA	●	●	●	●	●	●	●	●	●	
Indirect GHG emissions (Scope 2)	2016	●	●	●	NA	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	NA	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	NA	●	●	●	●	●	●	●	NR	●	
Direct energy consumption	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	NA	●	●	●	●	●	●	●	●	●	
Electricity purchased	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	NA	●	●	●	●	●	●	●	NR	●	
Water withdrawal	2016	●	●	●	●	●	●	●	●	●	●	●	NR	●	100
	2015	●	●	●	NA	●	●	●	●	●	●	●	NR	●	
	2014	●	●	●	●	●	●	●	●	●	●	●	NR	●	
Effluents	2016	●	●	●	NR	●	●	●	●	●	●	●	NR	●	100
	2015	NR	NR	NR	NR	●	NR	●	●	●	●	NR	NR	●	
	2014	NR	NR	NR	NR	●	NR	●	●	●	●	●	NR	●	
Produced water	2016	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	2015	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	2014	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Waste disposal	2016	●	●	●	●	●	●	●	●	●	●	●	NR	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	NR	●	
	2014	●	●	●	●	●	●	●	●	●	●	●	NR	●	
Oil and chemical spills	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	●	●	●	●	●	●	●	●	●	●	
Oxides of nitrogen (NOx)	2016	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	100
	2015	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	
	2014	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	
Sulphur dioxide (SO ₂)	2016	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	100
	2015	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	
	2014	NR	NR	NR	NR	●	●	NR	NR	NR	NR	NR	NR	NR	
Volatile Organic Compounds (VOCs)	2016	NR	NR	NR	●	NR	●	●	NA	NR	NR	NR	NR	NR	100
	2015	NR	NR	NR	●	NR	●	●	NA	NR	NR	NR	NR	NR	
	2014	NR	NR	NR	NR	●	NR	●	●	NA	NR	NR	NR	NR	
Volume of methane (CH ₄) emitted	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	●	●	●	●	●	●	●	●	●	●	
Direct methane (CH ₄) emissions	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	2015	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2014	●	●	●	●	●	●	●	●	●	●	●	●	●	

Remarks:

NA: Not available

NR: Not relevant



GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EN8	Total water withdrawal	Million m ³	3.24	3.63	3.59
	• Surface water	Million m ³	0.19	0.27	0.31
		%	5.73	7.44	8.75
	• Seawater: other purposes	Million m ³	0.01	0.01	0.02
		%	0.24	0.19	0.56
	• Water supply	Million m ³	2.92	3.18	3.03
		%	90.28	87.50	84.56
	• Groundwater	Million m ³	0.11	0.15	0.17
		%	3.42	4.10	4.72
	• Rainwater	Million m ³	0.01	0.03	0.05
		%	0.33	0.72	1.41
	Total salt/brackish water (seawater + once through cooling)	Million m ³	0.01	0.01	0.02
G4-EN10	Water from all other sources (surface water + groundwater)	Million m ³	0.30	0.42	0.48
	Recycled & reused water	Percentage of water withdrawal	5.04	6.00	5.87
		Million m ³	0.17	0.23	0.21
	Water intensity	m ³ /mboe	0.009	0.009	0.009

Remarks:

- Strategic Objective 2020: Reduce water consumption in high risk areas and limit the increase of water consumption in areas with high consumption.
- In 2016, the amount of seawater use has increased from fire pump testing at Khao Bo Ya Gas Terminal.
- In 2016, the amount of surface water use has increased from covering the new WECozI Project to the scope.
- In 2016, the amount of recycle & reused water has decreased in Jan - Jul because the equipment for withdrawing recycle & reused water to water the plants at PTT Research and Technology Institute (PTT RTI) was undergoing maintenance.



GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EN22	Total water discharge	Million m ³	1.26	1.49	1.47
	Chemical oxygen demand (COD)	Tonne	121.28	132.64	117.76
	Biochemical oxygen demand (BOD)	Tonne	3.85	4.72	7.59

Remark:

- Water discharge from Rayong Gas Separation Plant was treated by Comprehensive Wastewater Treatment Plant. The quality of effluents remained in line with the legal requirements.



Emissions

GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EN21	Volatile Organic Compounds (VOCs)	Tonne	7,798.05	9,472.17	9,937.58
	VOCs intensity	Tonne per million barrels oil equivalents (mboe)	21.12	24.38	24.76
	Oxides of nitrogen (NOx)	Tonne	970.33	1,145.90	1,090.25
	NOx intensity	Tonne per million barrels oil equivalents (mboe)	2.63	2.95	2.72
	Sulphur dioxide (SO ₂)	Tonne	138.56	77.35	97.58
	SO ₂ intensity	Tonne per million barrels oil equivalents (mboe)	0.38	0.20	0.24

Remarks:

- Strategic Objective 2020: Zero emission rate of SO₂, NOx, and VOCs.
- SO₂ and NOx emissions from all facilities remain below the legal threshold for air quality.
- Expanding VOCs emission scope to cover 3 more aviations and 8 retailers.



Waste

GRI	Required Data	Unit	PTT		
			2014	2015	2016
	Waste from routine operations	Tonne	13,303.74	15,517.39	16,847.63
	Total hazardous waste disposal	Tonne	2,933.41	4,448.45	4,773.07
	• Secure landfill	Tonne	513.03	110.42	122.16
	• Reuse	Tonne	7.05	0.05	0.00
	• Recycle	Tonne	202.09	537.36	279.42
	• Recover	Tonne	1,905.22	3,335.31	3,676.94
	• Others (incineration, compositing, deep well injection)	Tonne	306.07	465.30	694.55
	Total non-hazardous waste disposal	Tonne	10,370.33	11,068.95	12,074.56
	• Landfill	Tonne	116.12	24.04	247.76
	• Reuse	Tonne	540.51	0.12	0.03
	• Recycle	Tonne	458.40	1,788.62	2,696.53
	• Recover	Tonne	8.47	161.18	215.58
	• Domestic waste	Tonne	9,246.82	9,095.00	8,870.36
	Waste from non-routine operations (e.g. construction waste, spill clean-up waste, crisis management waste)	Tonne	3,136.40	2,993.39	7,675.01
	Total hazardous waste disposal	Tonne	1,899.74	1,725.25	3,485.42
	• Secure landfill	Tonne	99.39	131.83	44.95
	• Recycle	Tonne	110.84	0.00	0.00
	• Recover	Tonne	724.58	1,537.48	3,369.90
	• Others	Tonne	964.93	55.94	70.57
	Total non-hazardous waste disposal	Tonne	1,236.67	1,315.47	4,189.59
	• Landfill	Tonne	68.51	25.43	0.00
	• Reuse	Tonne	1,080.20	710.00	3,721.90
	• Recycle	Tonne	78.99	287.30	67.69
	• Domestic waste	Tonne	8.96	5.31	0.00
	On-site waste storage	Tonne	64.77	467.85	118.25

Remarks:

- Waste to landfill from routine operations is separated at the beginning of the disposal process, allowing for more appropriate waste disposal methods, in alignment with the Strategic Objective 2020 "Zero Hazardous Waste to Landfill."
- The amount of waste from non-routine operations includes waste generated from the construction of capital projects, oil and chemical spillage, and risk & crisis management.
- There is no established threshold for hazardous waste, as all operations must report their total volume of hazardous waste sent for disposal.
- The amount of waste from non-routine operations has increased because Rayong Gas Separation Plant was using soil and concrete residuals for land reclamation (legally permitted) on top of the amount of waste from process testing for production improvement.
- Increasing routine waste is generated from maintenance activity at Rayong Gas Separation Plant and from pilot project at PTT Research and Technology Institute (PTT RTI).
- Increasing non-hazardous routine waste to landfill is generated from Sriracha Oil Terminal maintenance using sand for tank polishing.



GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EN24	Oil and chemical spills				
	From PTT operational boundary				
	• Number of hydrocarbon spills	Number of spills	1	0	1
	• Volume of hydrocarbon spills	m³	0.30	0.00	3.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m³	0.00	0.00	0.00
	From 3 rd party (transportation): truck transportation				
	• Number of hydrocarbon spills	Number of spills	6	4	2
	• Volume of hydrocarbon spills	m³	42.03	18.25	16.09
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m³	0.00	0.00	0.00
	From 3 rd party (transportation): ship and barge transportation				
	• Number of hydrocarbon spills	Number of spills	NA	0	0
	• Volume of hydrocarbon spills	m³	NA	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	NA	0	0
	• Volume of non-hydrocarbon spills	m³	NA	0.00	0.00
	Significant spill (Volume ≥ 100 barrels)				
	From PTT operational boundary				
	• Number of hydrocarbon spills	Number of spills	1	0	1
	• Volume of hydrocarbon spills	m³	26.00	0.00	17.87
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m³	0.00	0.00	0.00
	From 3 rd party (transportation): truck transportation				
	• Number of hydrocarbon spills	Number of spills	3	4	0
	• Volume of hydrocarbon spills	m³	83.00	129.35	0.00
	• Number of non-hydrocarbon spills	Number of spills	0	0	0
	• Volume of non-hydrocarbon spills	m³	0.00	0.00	0.00
	From 3 rd party (transportation): ship and barge transportation				
	• Number of hydrocarbon spills	Number of spills	NA	0	0
	• Volume of hydrocarbon spills	m³	NA	0.00	0.00
	• Number of non-hydrocarbon spills	Number of spills	NA	0	0
	• Volume of non-hydrocarbon spills	m³	NA	0.00	0.00

Remarks:

NA: Not available

- Volume of hydrocarbon and non-hydrocarbon spills include spills which occur in operational areas, as well as those from truck and shipping transportation, that result in a volume of more than 1 barrel of oil spilled to the environment. In spill cases, PTT executes spill response procedures to control spills within the shortest time possible in order to minimize environmental impacts, for instance, with the use of booms and skimmers.



Energy

GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-EN3	Total direct energy consumption	GJ	46,963,071	48,339,286	44,600,252
	Total indirect energy consumption	GJ	2,817,088	2,620,978	2,516,002
	Electricity purchased	GJ	2,817,088	2,620,978	2,516,002
GRI	Required Data	Unit	PTT Group		
			2014	2015	2016
G4-EN3	Total energy consumption	GJ	302,256,787	284,641,462	265,716,839
	Total direct energy consumption • PTT operational control	GJ	284,156,488	260,217,367	238,851,349
	Total indirect energy consumption	GJ	18,100,299	24,424,096	26,865,490
G4-EN5	Direct energy intensity				
	• Oil and gas production	GJ/mboe	165,510	190,238	196,716
	• Refinery throughput	GJ/Tonne refinery throughput	1.13	1.91	2.14
	• Petrochemical throughput	GJ/Tonne petrochemical product	11.20	2.88	9.14

Remarks:

- Strategic Objective 2020: Reduce energy intensity by at least 1.9% annually based on a business as usual (BAU) scenario until 2017.
- Only electricity purchase is counted as part of indirect energy consumption.
- The organizational boundary of PTT Group based on the equity share approach includes all domestic subsidiaries in which PTT directly owns more than 20% of shares or indirectly owns 100% of shares.
- Organizational boundary of energy intensity of Oil & Gas, Refinery, and Petrochemical sectors is similar to the greenhouse gas inventory.
- Restatement of energy consumption data in 2014-2015 for PTTGC in the data related to PTT Group



Methane Emissions

GRI	Required Data	Unit	PTT		
			2014	2015	2016
	Volume of methane emitted (leakage, venting, and flaring)	m ³	42,365,227	34,851,750	30,606,285
	Direct CH ₄ emissions (extracted from GHG)	Tonne	42,831	40,405	33,138
G4-OG6	Volume of flared hydrocarbon	m ³	384,836	346,722	197,367
	Volume of vented hydrocarbon	m ³	32,745	55,562	21,474
GRI	Required Data	Unit	PTT Group		
			2014	2015	2016
	Volume of methane emitted (leakage, venting, and flaring)	m ³	83,405,431	77,698,553	71,332,568
	Direct CH ₄ emissions (extracted from GHG)	Tonne	56,566	52,686	61,273
G4-OG6	Volume of flared hydrocarbon	m ³	686,912	764,932	1,210,395
	Volume of vented hydrocarbon	m ³	32,745	55,562	21,474

Remarks:

- Restatement: In 2015, PTT updated its methane leakage calculation methodologies for better accuracy and consistency. Data from previous years have also been recalculated and are included in this report.
- The volume of methane emitted includes leakage (fugitive), gas vented from processes (CO₂ separation and ethylene production), methane emitted from vented emissions, and flaring.
- In 2016, the data for hydrocarbon vented and flared in one subsidiary was corrected and reported, resulted in a significant increase of flared hydrocarbon volume. PTT is on the process of recalculating past years' volume of flared and vented hydrocarbon and expects to report in subsequent year.
- Direct CH₄ emissions include those from aforementioned sources, as well as direct CH₄ emitted from combustion sources.



GHG Emissions

GRI	Required Data	Unit	PTT		
			2014	2015	2016
	Total GHG emissions	Tonne CO ₂ equivalents	11,776,221	11,762,998	10,652,132
G4-EN15	GHG Scope 1	Tonne CO ₂ equivalents	11,371,147	11,407,679	10,334,822
G4-EN16	GHG Scope 2	Tonne CO ₂ equivalents	405,074	355,319	317,309
G4-EN17	GHG Scope 3	Tonne CO ₂ equivalents	122,819,319	125,722,575	127,078,140
GRI	Required Data	Unit	PTT Group		
			2014	2015	2016
G4-EN15	GHG Scope 1 • PTT operational control • PTT equity share	Tonne CO ₂ equivalents	31,122,074	31,115,981	29,979,970
		Tonne CO ₂ equivalents	20,950,243	20,701,762	19,693,954
G4-EN16	GHG Scope 2 • PTT operational control • PTT equity share	Tonne CO ₂ equivalents	2,382,210	1,800,870	1,606,220
		Tonne CO ₂ equivalents	1,406,599	1,080,016	950,828
G4-EN17	GHG Scope 3	Tonne CO ₂ equivalents	122,819,319	125,722,575	127,078,140
G4-EN18	GHG intensity				
	• Oil and gas production	Tonne CO ₂ equivalents/Million barrels oil equivalents	35,617	38,130	38,045
	• Refinery	Tonnes CO ₂ equivalents/Tonne refinery throughput	0.0877	0.0899	0.1416
	• Petrochemical	Tonnes CO ₂ equivalents/Tonne petrochemical product	0.6461	0.5499	0.5432

Remarks:

- Strategic Objective 2020: Reduce GHG intensity by 5% based on business as usual (BAU) scenario, from a 2012 baseline.
- The organizational boundary of PTT Group based on the equity share approach includes all domestic subsidiaries in which PTT directly owns more than 20% of shares or indirectly owns 100% of shares.
- Scope 3 emissions include the combustion of fuel sold by PTT only.
- Decreasing trend of GHG emission in 2016 was primarily due to the Energy Efficiency Projects, the process improvement of flaring reduction at Rayong Gas Separation Plant, as well as planned shutdown for maintenance at some facilities such as GPSC's power plant in Sriracha district.
- GHG intensity of the Oil and Gas Production Sector in 2016 represented stable trend compared to the previous year.
- GHG intensity reporting boundary for the Refinery Sector includes PTTGC, TOP, and IRPC. Increasing trend was due to an emerging new power utility unit at TOP.
- GHG intensity reporting boundary for the Petrochemical Sector includes PTTGC, IRPC, HMC, and PTTAC, which demonstrates a decreasing trend.



Environmental Management

Required Data	Unit	PTT		
		2014	2015	2016
Environmental Policy/Management System				
Capital investments	Million baht	NA	1,857	132
Operating expenses	Million baht	NA	156	356
Total expenses (Capital Investment + Operating Expense)	Million baht	NA	2,013	488
Savings, cost avoidance, income, tax incentives, etc.	Million baht	NA	367	142
Operations covered (by revenue, production volume, or employees, etc.)	%	NA	100	100
Environmental Violations				
Number of violations of legal obligations/regulations	Case	0	0	0
Amount of fines/penalties related to the above	Baht	0	0	0
Environmental liability accrued at year end	Baht	0	0	0

Remarks:

- In 2015, PTT developed the methodologies to quantify and consolidate environmental expense that occurred under PTT's budget as well as to approximate return on environmental investment from major environmental projects.
- In 2016, PTT improved the methodologies for completeness and to be in accordance with the Environmental Management Accounting Procedures and Principles developed by the United Nations. Return on environmental investment calculation was improved by including the projects registered under PTT's Productivity Improvement Circle Programs.
- Major decline in environmental investment in 2016 comparing to 2015 was due to the completion of the Waste Heat Recovery Unit at Rayong Gas Separation Plant. This project accounted for approximately 80% of the total environmental budget in 2015.
- Savings in 2016 excludes savings from projects in 2015.



Safety

Repoerting Scope		Year	PTT Operated Business																2016 Coverage (%)
			PTT Building							Terminal									
			Head Office	Prakanong Office	Research & Technology Institute	Rayong Office	Oil Business Academy (OBA)			Gas Separation Plant (GSP)	Gas Transmission (GTM)	Gas Terminal							
Near miss incident	Total workforce and independent contractor	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	Total workforce and independent contractor	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●	NR	
	Total workforce and independent contractor	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●	NR	
Occupational illness frequency rate (OIFR)	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●	NR	
	Independent contractor		NA	NA	NA	NA	NR	NA	NA	NA	NA	NA	NA	NA	NR	NA	NR		
	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●	NR	
Fatalities	Independent contractor		NA	NA	NA	NA	NR	NA	NA	NA	NA	NA	NA	NA	NR	NA	NR	100	
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		100
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
	Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Absentee rate (AR)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●	NR	
	Independent contractor		NA	NA	NA	NA	NR	NA	NA	NA	NA	NA	NA	NA	NR	●	NR		
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		NA	NA	NA	NA	NR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR			
Lost workday case (LWC)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	●		NR
	Independent contractor		NA	NA	NA	NA	NR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR		
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR				
Lost day rate (LDR)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
	Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR			
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR				
Total recordable injuries case (TRIC)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
	Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR			
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR				
Total recordable injuries rate (TRIR)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
	Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR			
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR				
Lost time injury frequency rate (LTIFR)	Total workforce	2014	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
	Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR			
	Total workforce	2016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	100	
	Independent contractor		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Total workforce	2015	●	●	●	●	NR	●	●	●	●	●	●	●	●	●	NR		
Independent contractor		●	●	●	●	NR	●	●	●	●	●	●	NR	●	NR				

Remarks:

NA: Not available

NR: Not relevant

• Total Workforce refers to employees and supervised contractors.

• Contractor refers to independent contractors only.

• Working hours at service stations include those working at PTT-owned and operated stations only. Reporting includes total workforce only.

• Working hours at NGV Service Stations cover NGV Mother Station and PTT-owned and operated service stations only.

GRI	Required Data	Unit	PTT		
			2014	2015	2016
G4-LA6 ¹	Lost workday case (LWC) ²				
	• Total workforce	Person	7	4	4
	• Independent contractor	Person	1	0	4
	Total recordable injuries case (TRIC) ³				
	• Total workforce	Person	17	5	13
	• Independent contractor	Person	7	1	4
	Total recordable injuries rate (TRIR) ³				
	• Total workforce ⁴	Person per 200,000 hours worked	0.13	0.03	0.09
	• Independent contractor ⁵	Person per 200,000 hours worked	0.10	0.02	0.06
	Lost day rate (LDR)				
	• Total workforce	Lost days per 200,000 hours worked	0.46	0.28	0.37
	• Independent contractor	Lost days per 200,000 hours worked	0.45	0.00	1.42
	Absentee rate (AR)				
	• Total workforce	%	1.32	1.53	1.32
	• Independent contractor	%	NA	NA	NA
	Lost time injury frequency rates (LTIFR) ³				
	• Total workforce	Person per 200,000 hours worked	0.05	0.03	0.03
	• Independent contractor	Person per 200,000 hours worked	0.01	0.02	0.06
	Occupational illness frequency rate (OIFR) ³				
	• Total workforce	Person per 200,000 hours worked	0	0	0
	• Independent contractor	Person per 200,000 hours worked	NA	NA	NA
	Fatalities				
	• Total workforce	Person	0	0	0
	• Independent contractor	Person	0	0	0
	Near Misses				
	• Total workforce & independent contractor	Case	154	146	164
Accident	• Number of accidents from using corporate vehicle ⁶	Case	8	14	14
	• Number of land transport accidents per 1,000,000 km ⁷	Case	0.11	0.10	0.074

Remarks:

NA: Not available

¹ The reporting boundary covers domestic operations only, not broken down at the regional level. OH&S data is also not broken down by gender because PTT equally regards the importance of safety for all, employees, in accordance with PTT's Code of Business Ethics. The data excludes contractors working on construction projects that have not yet been handed over to PTT, such as the Natural Gas Transmission Pipeline Project.

² Monitored by calendar day, and is recorded after the day on which the incident occurred. 2020 target is equal to zero.

³ Do not include first aid cases.

⁴ 2020 target for total workforce equals to 0.066 per 200,000 hours.

⁵ 2020 target for independent contractors equals to 0.086 per 200,000 hours.

⁶ 2016 target equals to 6.

⁷ 2016 target equals to 0.05.

Fatalities

Zero
person

Awards and Recognitions

In 2016, PTT received a total of 60 awards and recognitions in various areas from 33 institutions, as follows:

34 National Awards from
23 Institutions



ISO 22301:2012 Certification for PTT Business Continuity Management System (BCMS)

Given by Management System Certification Institute (MASCI)

EIT-CSR Awards 2016:

Outstanding State-owned Enterprise with socially and environmentally-responsible performance, assessed from disclosures in sustainability reports and public sources.

Given by The Engineering Institute of Thailand under H.M. The King's Patronage



Sustainability Report Award 2016

for 4 consecutive years, 'Best' Category in 2016

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

The No. 1 Brand Thailand Award 2015-2016, awarded to:

- PTT Life Station;
- Café Amazon; and
- PTT Lubricants, which as polled as the number one most trusted brand for 5 consecutive years.

Given by Marketeer Magazine

Outstanding Industry Award 2016

Two awards presented to:

- Rayong Gas Separation Plant: Safety Management Category (10-time winner)
- Khanom Gas Separation Plant: Quality Management Category (5-time winner)

Given by Ministry of Industry



State-owned Enterprise Awards 2016:

- Outstanding State-owned Enterprise Award 2016
- Best Transparency and Disclosure Award
- Best Innovation Award for 7 consecutive years)

Given by Ministry of Finance

BrandAge Thailand's Most Admired Brand Award 2016

- PTT Life Station was ranked number one in the polls of most trusted service stations for 13 consecutive years
- PTT Life Station received the "Thai Brand" recognition award for maintaining its number one position in the face of intense competition with international brands, representing a source of pride for Thailand and testament to its popularity amongst customers for over 10 years

Furthermore, PTT Lubricants was ranked at number one in the poll of most trusted brands for 6 consecutive years.

Given by BrandAge Magazine



Rayong Gas Separation Plant received the Gold Award for International QCC at the International Convention on Quality Control Circles (ICQCC) 2016

For this project, knowledge and experience were applied to build a model in the carbon dioxide removal process, resulting in the reduction of energy use by 13% and cost reductions for the organization by 115 million baht per year for the Energy Use Reduction from Heat Exchangers - AGRU Reboilers Project, Rayong Gas Separation Plant, Unit 5.

Given by Department of Industrial Promotion, Ministry of Industry, in collaboration with The Association of QC Headquarters of Thailand



Outstanding Corporate Governance Award 2016

Given by Office of the National Anti-Corruption Commission, Thai Chamber of Commerce, and University of the Thai Chamber of Commerce



2016 Corporate Governance Report of Thai Listed Companies:

PTT was ranked at the Excellent CG Level (Maximum Score: 5) for 8 consecutive years, and was ranked in the Top Quartile of listed companies with market value of at least 1 billion baht.

Given by Thai Institute of Directors (IOD), with support from the Stock Exchange of Thailand

Best Exporter Award 2016,

presented at the Prime Minister's Export Award Ceremony

Given by Ministry of Commerce



26 International Awards from 10 Institutions

PTT was ranked in the top 25 for transparency among 100 biggest multinationals based in 15 Emerging Markets.

Given by Transparency International



Asian Excellence Awards 2016

consisting of 6 awards as follows:

3 Individual Awards:

- Asia's Best CEO: Mr. Tevin Vongvanich
- Asia's Best CFO: Mr. Wirat Uanarumit (2 consecutive years)
- Best Investor Relations Professional: Mr. Phichin Aphiwantapanorn (3 consecutive years)

3 Corporate Awards:

- Best Investor Relations (6 consecutive years)
- Best Corporate Communications Team
- Asia's Best CSR (4 consecutive years)

Given by Corporate Governance Asia Magazine

- Eleventh Corporate Governance Asia Recognition Awards 2015, Icon on Corporate Governance Award for 11 consecutive years, resulting in PTT's recognition as a CG Model in Asia

- Asian Corporate Director Recognition Awards 2015 for 4 consecutive years

Given by Corporate Governance Asia Magazine

PTT maintained its position for 5 consecutive years as a member of the Dow Jones Sustainability World Index (DJSI World) and Dow Jones Sustainability Emerging Markets Index (DJSI Emerging Markets)

in the Oil & Gas Upstream & Integrated Industry (OGX) and was classified as Silver Class in RobecoSAM Sustainability Yearbook 2017
Given by RobecoSAM and S&P Dow Jones Indices

MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM

The Innovators 2016 – Corporate Finance Award for the categories, Process Innovation and Product Innovation,

awarded to the innovation, PTT Cash Easy 2.0 – Automated Cash Management Solution.

Given by Global Finance Magazine

Café Amazon was voted by Time Out Bangkok Magazine as having the best tasting Americano under their Black Coffee Selection

Given by Time Out Bangkok Magazine

FORTUNE GLOBAL 500

PTT was ranked 146 out of 500 of the world's largest companies.

Given by Fortune Global 500

"Data Culture Champion" Award

for leadership in organizational data culture. PTT is the first energy company in Thailand to utilize big data in enhancing capacity for its business operations.

Given by Microsoft Asia: The Power of Data



The Asset Corporate Awards 2016

- The Asset CEO of the Year Award in the Oil and Gas Business: Mr. Tevin Vongvanich
- Best Risk Management Solution Award from The Asset Triple A Transaction Banking Awards 2016
- The Asset Corporate Excellence Awards for the following categories:
 - The Platinum Award Winners (8 consecutive years)
 - Best Chief Executive Officer Awards
 - Best Investor Relations Team Awards
 - Best Initiatives in Innovation Awards (Eco-Cure Water Systems)
 - Best Initiatives in Diversity and Inclusion Awards

Given by The Asset Magazine

PTT received awards in the following categories:

- Most Organized Investor Relations
- Strongest Adherence to Corporate Governance
- Most Consistent Dividend Policy
- Best Annual Report in Thailand

Given by Alpha Southeast Asia Magazine

GRI, IR, UNGC and UN SDGs Content Index

Global Reporting Initiative (GRI)

General Standard Disclosures

Profile	Description	Page/Link/Comment
Strategy and Analysis		
G4-1	CEO Statement	4-5
G4-2	Key Impacts, Risks, and Opportunities	4-5, 6-8, 12-13, 16
Organizational Profile		
G4-3	Name of the organization	6
G4-4	Primary brands, products, and services	6-8
G4-5	Location of organization's headquarters	8
G4-6	Countries of operation	8
G4-7	Nature of ownership and legal form	6
G4-8	Markets served	6-8
G4-9	Scale of the reporting organization	8, 64-65
G4-10	Total workforce by type	64-65
G4-11	Percentage of total employees covered by collective bargaining agreements	55 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-12	Describe the organization's supply chain	6-8
G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or supply chain	In 2016, there were no significant changes regarding the organization's size, structure, ownership or supply chain.
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization	34-36
G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or endorses	14 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx
G4-16	List memberships of associations and national or international advocacy organizations in which the organization is part	14 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx
Identified Material Aspects and Boundaries		
G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents, and whether any entity is not covered by the report	1
G4-18	Explain the process for defining report content and the Aspect Boundaries, and how the organization implements the Reporting Principles for Defining Report Content	2-3
G4-19	List all the material Aspects identified in the process for defining report content	3
G4-20	Report the Aspect Boundary within the organization for each material Aspect	3
G4-21	Report the Aspect Boundary outside the organization for each material Aspect	3
G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements	1
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries	1
Stakeholder Engagement		
G4-24	List of stakeholder groups engaged by the organization	18-19 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx

Profile	Description	Page/Link/Comment
G4-25	Basis for identification and selection of stakeholders	18-19 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx
G4-26	Organization's approach to stakeholder engagement	18-19 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Stakeholder-Engagement/Pages/default.aspx
G4-27	Key topics and concerns raised through stakeholder engagement, and how the organization has responded	18-19
Report Profile		
G4-28	Reporting period	1
G4-29	Date of the most recent previous report	1
G4-30	Reporting cycle	1
G4-31	Contact point for the report	Table of contents
G4-32	GRI Content Index for "in accordance" option the organization has chosen	76-80
G4-33	Report the organization's policy and current practice regarding external assurance for the report	81-82
Governance		
G4-34	Governance structure of the organization	http://www.pttplc.com/en/About/Organization/Pages/Organization-Chart.aspx
G4-35	Process for delegating authority for economic, environmental, and social topics	http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx
G4-36	Appointment of an executive-level position or positions with responsibility for economic, environmental and social topics	14-17
G4-38	Composition of the highest governance body and its committees	Annual Report 2016
G4-39	Report whether the Chair of the highest governance body is also an executive officer	Annual Report 2016
G4-40	Nomination and selection processes for the highest governance body and its committees	Annual Report 2016
G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	20-22
G4-44	Processes for evaluation of the highest governance body's performance with respect to economic, environmental, and social topics	14-17 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx
G4-46	Role of highest governance body in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics	12
G4-48	Highest committee or position that formally reviews and approves the organization's sustainability report and ensures all material Aspects are covered	2
Ethics and Integrity		
G4-56	Organization's values, principles, standards and norms of behavior	10-13, 20-23, 50-55
G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, or matters related to organizational integrity	20-22
G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity	20-22

Specific Standard Disclosures: Economic

Profile	Description	Page/Link/Comment
Economic Performance		
G4-DMA	Disclosure on Management Approach	10-13
G4-EC1*	Direct economic value generated and distributed	63
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	36-38
G4-EC4	Financial assistance received from government	63
Indirect Economic Impacts		
G4-DMA	Disclosure on Management Approach	10-13, 56-62
G4-EC7	Development and impact of infrastructure investments and services supported	56-62
G4-EC8	Significant indirect economic impacts	29, 56-62

* Indicators G4-EC1 - Community Investment has been externally verified by an independent third party organization, whose assurance statement is available on page 83-84.

Specific Standard Disclosures: Environmental

Profile	Description	Page/Link/Comment
Energy		
G4-DMA	Disclosure on Management Approach	36-38 http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx
G4-EN3*	Direct energy consumption	70
G4-EN4	Indirect energy consumption	70
G4-EN5*	Energy intensity	34, 36-38, 70
G4-EN6	Reduction of energy consumption	36-38, 70
Water		
G4-DMA	Disclosure on Management Approach	39-40 http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx http://www.pttplc.com/en/Sustainability/Environment/Pages/Water-Management.aspx
G4-EN8*	Total water withdrawal by source	67
G4-EN9	Water sources significantly impacted by water withdrawal	39-40
G4-EN10	Percentage and total volume of water recycled and reused	67
Biodiversity		
G4-DMA	Disclosure on Management Approach	43 http://www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx
G4-EN12	Description of significant impacts of activities, products, and services on biodiversity	43
G4-OG4*	Number and percentage of significant operating sites in which biodiversity risk has been assessed and monitored	43
Emissions		
G4-DMA	Disclosure on Management Approach	36-38, 40-41 http://www.pttplc.com/en/Sustainability/Environment/Climate-Strategy/Pages/default.aspx
G4-EN15*	Direct greenhouse gas (GHG) emissions (Scope 1)	36-38, 71
G4-EN16*	Energy indirect greenhouse gas (GHG) emissions (Scope 2)	36-38, 71
G4-EN17*	Other indirect greenhouse gas (GHG) emissions (Scope 3)	36-38, 71
G4-EN18*	Greenhouse gas emissions intensity	36-38, 71
G4-EN21*	NOx, SOx, and other significant air emissions	40-41, 69
Effluents and Waste		
G4-DMA	Disclosure on Management Approach	42 http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx
G4-EN22*	Total water discharge by quality and destination	67
G4-EN23*	Total weight of waste by type and disposal method	67
G4-EN24*	Total number and volume of significant spills	43, 69
G4-OG6*	Volume of flared and vented hydrocarbon	70
Products and Services		
G4-DMA	Disclosure on Management Approach	30-33 http://www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx
G4-EN27	Extent of impact mitigation of environmental impacts of products and services	30-33
Compliance		
G4-DMA	Disclosure on Management Approach	34-36 http://www.pttplc.com/en/Sustainability/Environment/Stewardship/Pages/default.aspx
G4-EN29	Value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	No issues of non-compliance with environmental laws and regulations in 2016.
Transport		
G4-DMA	Disclosure on Management Approach	44-46 http://www.pttplc.com/en/Sustainability/Social/Security-Safety-Health/Pages/default.aspx
G4-EN30	Significant environmental impacts of transporting products and other goods and materials	43
Supplier Environmental Assessment		
G4-DMA	Disclosure on Management Approach	27-28 http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx
G4-EN32	Percentage of new suppliers screened using environmental criteria	27-28

* Indicators G4-EN3, G4-EN5, G4-EN8, G4-EN15, G4-EN16, G4-EN17, G4-EN18, G4-EN21, G4-EN22, G4-EN23, G4-EN24, G4-OG4 and G4-OG6 have been externally verified by an independent third party organization, whose assurance statement is available on page 83-84.

Specific Standard Disclosures: Social

Profile	Description	Page/Link/Comment
Employment		
G4-DMA	Disclosure on Management Approach	50-53 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-LA1	Total number and rates of new employee hires and employee turnover	64-65
G4-LA2	Benefits provided to full-time employees	50-53
G4-LA3	Return to work and retention rates after parental leave	65
Occupational Health and Safety		
G4-DMA	Disclosure on Management Approach	44-47 http://www.pttplc.com/en/Sustainability/Social/Security-Safety-Health/Pages/default.aspx
G4-LA6*	Types of injury and rates of injury, occupational diseases, lost days, absenteeism, and total number of work-related fatalities	46, 73
G4-LA7	Workers with high incidence or high risk of diseases	44-46
Training and Education		
G4-DMA	Disclosure on Management Approach	50-53 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-LA9*	Average hours of training per year per employee	50, 65
G4-LA10	Programs for skills management and lifelong learning	50-53
G4-LA11	Percentage of employees receiving regular performance and career development reviews	50-55
Diversity and Equal Opportunity		
G4-DMA	Disclosure on Management Approach	50-53 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-LA12	Composition of governance bodies and breakdown of employees per employee category	64
Supplier Assessment for Labor Practices		
G4-DMA	Disclosure on Management Approach	27-28 http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx
G4-LA14	Percentage of new employees screened using labor practices criteria	27-28 http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx
G4-LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	24 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Performance.aspx
Labor Practices Grievance Mechanisms		
G4-DMA	Disclosure on Management Approach	http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-LA16	Number of grievances about labor practices filed, addressed, and received through formal mechanisms	No grievances about labor practices filed in 2016.
Investment		
G4-DMA	Disclosure on Management Approach	16, 27-28 http://www.pttplc.com/en/opportunity/procurement/pages/supplier-code-of-conduct.aspx
G4-HR2	Total hours of employee training on human rights policies or precedures concerning aspect of human rights that are relevant to operations	55
Non-discrimination		
G4-DMA	Disclosure on Management Approach	55 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-HR3	Total number of incidents of discrimination and corrective actions taken	55 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Performance.aspx

Profile	Description	Page/Link/Comment
Freedom of Association and Collective Bargaining		
G4-DMA	Disclosure on Management Approach	55 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Sustainable-Human-Resource-Management.aspx
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk	55 http://www.pttplc.com/en/Career/Sustainable-Human-Resource-Management/Pages/Performance.aspx
Assessment		
G4-DMA	Disclosure on Management Approach	16
G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	16
Supplier Human Rights Assessment		
G4-DMA	Disclosure on Management Approach	27-28 http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx
G4-HR10	Percentage of new suppliers that were screened using human rights criteria	27-28
Local Communities		
G4-DMA	Disclosure on Management Approach	48-49, 57-58 http://www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx
G4-SO1	Percentage of operations with local community engagement, impact assessments, and development programs	48-49, 57-58
G4-SO2	Operations with significant actual or potential negative impacts on local communities	48-49
G4-OG10	Number and description of significant disputes with local communities and indigenous peoples	48-49
Anti-corruption		
G4-DMA	Disclosure on Management Approach	23 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx
G4-SO4	Communication and training on anti-corruption policies and procedures	21-22
G4-SO5	Confirmed incidents of corruption and actions taken	23
Public Policy		
G4-DMA	Disclosure on Management Approach	http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Pages/Collaboration.aspx
G4-SO6	Total value of political contributions by country and recipient	Political contributions are prohibited under PTT regulations.
Compliance		
G4-DMA	Disclosure on Management Approach	27-28, 35 http://www.pttplc.com/en/Sustainability/PTT-Sustainability/Governance/Pages/Corporate-Governance.aspx
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	23, 27-28, 35
Supplier Assessments for Impacts on Society		
G4-DMA	Disclosure on Management Approach	27-28 http://www.pttplc.com/en/Sustainability/Economics/Supply-Chain-Management/Pages/default.aspx
G4-SO9	Percentage of new suppliers screened using social impacts criteria	27-28
Involuntary Resettlement		
G4-DMA	Disclosure on Management Approach	http://www.pttplc.com/en/Sustainability/Economics/Project-Management/Pages/default.aspx
G4-OG12	Operations where involuntary resettlement took place	27-28

Profile	Description	Page/Link/Comment
Asset Integrity and Process Safety		
G4-DMA	Disclosure on Management Approach	46 http://www.pttplc.com/en/Sustainability/Social/Security-Safety-Health/Pages/default.aspx
G4-OG13*	Process safety events, by business activity	46
Customer Health and Safety		
G4-DMA	Disclosure on Management Approach	31-32 http://www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx
G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services	No incidents of non-compliance concerning health and safety of products and services in 2016.
Product and Service Labeling		
G4-DMA	Disclosure on Management Approach	31-32 http://www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx
G4-PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling	No incidents of non-compliance concerning product and service information and labeling in 2016.
G4-PR5	Results of customer satisfaction surveys	32-33
Fossil Fuel Substitutes		
G4-DMA	Disclosure on Management Approach	30-32 http://www.pttplc.com/en/Sustainability/Environment/Product-Stewardship/Pages/Product-Safety.aspx
G4-OG14	Volume of biofuels produced and purchased	31-32

* Indicators G4-LA6, G4-LA9 and G4-OG13 have been externally verified by an independent third party organization, whose assurance statement is available on page 83-84.

Green text means indicators with added commentary in GRI Oil and Gas Sector Disclosure (OGSD)

Integrated Reporting <IR> Integrated Reporting <IR> Capitals

Capital	Description	Page
Financial	The pool of funds that is available to an organization for use in the product of goods or the provision of services; and obtained through financing, such as debt, equity or grants, or generated through operations or investments.	24-25, 34, 50-51, 56-57, 63
Manufactured	Manufactured physical objects that are available to an organization for use in the production of goods or the provision of services (e.g. buildings, equipment, and infrastructure).	29-33, 59, 62
Intellectual	Organizational, knowledge-based intangibles including intellectual property (e.g. patents, copyrights, software, rights and licenses) and organizational capital (e.g. tacit knowledge, systems, procedures and protocols).	30, 51-55
Human	People's competencies, capabilities and experience, and their motivations to innovate.	30, 51-55
Social and Relationship	The institutions and relationships within and between communities, groups of stakeholders and other networks, and the ability to share information to enhance individual and collective well-being (e.g. shared norms, common values and behaviors; key stakeholder relationships; intangibles associated with the brand and reputation; social license to operate).	18-19, 29, 51-55, 56-62
Natural	All renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization (e.g. air, water, land, minerals and forests, biodiversity and eco-system health).	34-43, 48-49, 62

United Nations Global Compact (UNGC) Communication on Progress - Advanced Level

Criterion	Description	Page
1	The COP describes mainstreaming into corporate functions and business units	14-17
2	The COP describes value chain implementation	24-33
3	The COP describes robust commitments, strategies or policies in the area of human rights	16, 20-23
4	The COP describes effective management systems to integrate the human rights principles	16
5	The COP describes effective monitoring and evaluation mechanisms of human rights integration	16, 48-49
6	The COP describes robust commitments, strategies or policies in the area of labor	16, 44-47, 55
7	The COP describes effective management systems to integrate the labor principles	27-28, 44-47, 55
8	The COP describes effective monitoring and evaluation mechanisms of labor principles integration	27-28, 44-47
9	The COP describes robust commitments, strategies or policies in the area of environmental stewardship	10-11, 30-32, 35-36
10	The COP describes effective management systems to integrate the environmental principles	10-11, 35-36
11	The COP describes effective monitoring and evaluation mechanisms for environmental stewardship	35-36
12	The COP describes robust commitments, strategies or policies in the area of anti-corruption	23
13	The COP describes effective management systems to integrate the anti-corruption principle	23
14	The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption	23
15	The COP describes core business contributions to UN goals and issues	10-13
16	The COP describes strategic social investments and philanthropy	56-62
17	The COP describes advocacy and public policy engagement	16-17, 22
18	The COP describes partnerships and collective action	29, 31-32, 47, 56-62
19	The COP describes CEO commitment and leadership	4-5
20	The COP describes Board adoption and oversight	14-17
21	The COP describes stakeholder engagement	18-19, 55, 57-58

United Nations Sustainable Development Goals (UN SDGs)

Criterion	Description	Page
1	End poverty in all forms everywhere	56-62
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	56-58, 60-61
3	Ensure healthy lives and promote well-being for all at all ages	56-62
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	50-55, 59-61
5	Achieve gender equality and empower all women and girls	50-55
6	Ensure availability and sustainable management of water and sanitation for all	62
7	Ensure access to affordable, reliable, sustainable and modern energy for all	60-61
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	50-55
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	30, 59-61
10	Reduce inequality within and among countries	8, 59-61
11	Make cities and human settlements inclusive, safe, resilient and sustainable	44-47, 59-61
12	Ensure sustainable consumption and production patterns	30-33
13	Take urgent action to combat climate change and its impacts	30-33, 36-38
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	39-40
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	62
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	20-23, 48-49, 50-53
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	8, 18-19, 57, 63



KPMG Phoomchai Audit Ltd.
Empire Tower, 50th-51st Floors
1 South Sathorn Road, Yannawa
Sathorn, Bangkok 10120, Thailand
Tel +66 2677 2000, Fax +66 2677 2222

บริษัท เคพีเอ็มซี ภูเก็ต สอบบัญชี จำกัด
ชั้น 50-51 เอ็มไพร์ทาวเวอร์
1 ถนนสาทรใต้ แขวงยานนาวา
เขตสาทร กรุงเทพฯ 10120
โทร +66 2677 2000 แฟกซ์ +66 2677 2222

Independent Limited Assurance Report

Relating to PTT Public Company Limited's Corporate Sustainability Report for the calendar year 2016

To the Directors of PTT Public Company Limited

Our conclusion

Based on the procedures performed, as described below, nothing has come to our attention that would lead us to believe that the Selected Sustainability Information identified below and included in the 2016 Sustainability Report for the year ended 31 December 2016, is not, in all material respects, prepared in accordance with the Global Reporting Initiative ("GRI") G4's Sustainability Reporting Guidelines and GRI G4's Oil and Gas Sector Disclosure ("GRI G4 Guidelines"), the AA1000 AccountAbility Principles Standard (2008) ("AA1000 APS") and management's calculation methodologies.

We, KPMG Phoomchai Audit Ltd, have been engaged by PTT Public Company Limited ("PTT") and are responsible for providing a limited assurance conclusion in respect of the Selected Sustainability Information for the period ended 31 December 2016 to be included in the Sustainability Report ("the Report") as identified below ("the Selected Sustainability Information").

Our assurance engagement is conducted in accordance with the International Standard on Assurance Engagements ISAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, ISAE 3410 *Assurance on Greenhouse Gas Statements* and AA1000 Assurance Standard (2008). These standards require the assurance team to possess the specific knowledge, skills and professional competencies needed to provide assurance on sustainability information, and that they comply with the requirements of the Code of Ethics for Professional Accountants of the International Federation of Accountants to ensure their independence. The firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have not been engaged to provide an assurance conclusion on any other information disclosed within the Report.

Selected Sustainability Information

Selected Sustainability Information includes the following data for the year ended 31 December 2016, for PTT's operations and activities in Thailand only:

- Energy consumption within organization (G4 – EN3)
- Energy intensity (G4 – EN5)
- Total water withdrawal by source (G4 – EN8)
- Direct greenhouse gas emissions (scope 1) (G4 – EN15)
- Energy indirect greenhouse gas emissions (scope 2) (G4 – EN16)
- Other indirect greenhouse gas emissions (scope 3) (G4 – EN17)
- Greenhouse gas emissions intensity (G4 – EN18)
- Nitrogen Oxide (NOx), Sulphur Oxide (SOx), and other significant air emissions (Volatile Organic Compounds Emissions) (G4 – EN21)
- Total water discharge by quality and destination (G4 – EN22)
- Total weight of waste by type and disposal method (G4 – EN23)
- Total number and volume of significant spills (G4 – EN24)
- Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region and by gender (G4 – LA6)
- Average hours of training per year per employee by gender, and by employee category (G4 – LA9)
- Economic value distributed – Community Investment (G4 – EC1)
- Number and percentage of significant operating sites in which biodiversity risk has been assessed and monitored (G4 – OG4)
- Volume of flared and vented hydrocarbons (G4 – OG6)
- Process safety events, by business activity (G4 – OG13)
- The description given by PTT in the "About this report" section on compliance with the accountability principles set forth in the AA1000 APS standard on inclusivity, materiality and responsiveness in the process adopted to prepare the Report.

Director's and management's responsibilities

The directors and management of PTT are responsible for the preparation and presentation of the Selected Sustainability Information, specifically ensuring that in all material respects the Selected Sustainability Information is prepared and presented in accordance with the GRI G4 Guidelines, the AA1000 APS standard and management's calculation methodologies. This responsibility also includes the internal controls relevant to the preparation of the Report that is free from material misstatement whether due to fraud or error.



Limited assurance over Selected Sustainability Information

In forming our limited assurance conclusion over the Selected Sustainability Information our procedures consisted of making enquiries and applying analytical and other evidence gathering procedures including:

- Interviews with senior management and relevant staff at corporate and operating sites;
- Inquiries about the design and implementation of the systems and methods used to collect and process the information reported, including the aggregation of source data into the Selected Sustainability Information;
- Inquiries about management practices and procedures related to identifying stakeholders and their expectations, determining material sustainability matters and implementing sustainability policies and guidelines;
- Visits to 3 sites¹, selected on the basis of a risk analysis including the consideration of both quantitative and qualitative criteria;
- Agreeing the Selected Sustainability Information to relevant underlying sources on a sample basis to determine whether all the relevant information has been included in the Selected Sustainability Information and prepared in accordance with the GRI G4 Guidelines and management's calculation methodologies.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

Observations

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

- **Inclusivity:** PTT has demonstrated a commitment to be accountable to its stakeholders. This is evident through the incorporation of stakeholder considerations within strategy, policies and targets. Mechanisms involving Subject Matter Experts are in place to identify and engage with stakeholders and take account of the outputs of stakeholder engagement throughout the organisation. For future stakeholder engagement, there is an opportunity to further formalise how stakeholders are prioritised based for example on respective influence and dependence.
- **Materiality:** Materiality assessment conducted by PTT relies on a structured approach, reviewed and updated on an annual basis, involving Subject Matter Experts providing feedback on material matters and endorsed by its top management. Materiality assessment is conducted considering the company's exposure to risk and the control systems in place to mitigate the risk, as well as the influence each aspect has on stakeholders.
- **Responsiveness:** PTT has in place processes to respond to issues relevant to the business and its stakeholders. Current initiatives such as Joint Consultant Committee Meeting with employees, as well as Community Consultations are illustrations of activities undertaken by PTT in response to stakeholder needs. An opportunity exists to summarise the most material sustainability aspects as well as associated objectives, targets, key performance indicators and action plans in a single dashboard.

Restriction of use of our report

Our report should not be regarded as suitable to be used or relied on by any party wishing to acquire rights against us other than PTT, for any purpose or in any other context. Any party other than PTT who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk. To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than PTT for our work, for this independent limited assurance report, or for the conclusions we have reached.

KPMG Phoomchai Audit Ltd.

KPMG Phoomchai Audit Ltd.
Bangkok
9 March 2017

¹ Rayong Gas Separation Plant, Chonburi Operation Center, Khao Bo Ya Gas Terminal

Reader Feedback Survey PTT Corporate Sustainability Report 2016

Feedback received from this survey will be used to improve the content and design of the Corporate Sustainability Report 2017. Thank you for your kind cooperation.

Please indicate an **X** in the box ☐ and provide your comments in the space provided.

1 Please indicate your interest in reading the Sustainability Report 2016:

- ☐ Get to know PTT
- ☐ Support investment decisions
- ☐ For research/education
- ☐ Prepare own sustainability report
- ☐ Others (Please specify)

2 Please provide your view on the completeness and reliability of the Sustainability Report 2016:

- Your understanding of PTT's material issues
☐ Very High ☐ High ☐ Medium ☐ Low ☐ Improve
- Alignment between PTT's sustainability strategy and sustainability performance
☐ Very High ☐ High ☐ Medium ☐ Low ☐ Improve
- Completeness and reliability of content
☐ Very High ☐ High ☐ Medium ☐ Low ☐ Improve
- Report content meets your expectations
☐ Very High ☐ High ☐ Medium ☐ Low ☐ Improve

3 Please indicate 3 material issues that are most important to you, and prioritize their importance according to the following criteria: 1 – Highly importance, 2 – Moderately importance, 3 – Slightly importance

- | | |
|---|---|
| <input type="radio"/> Corporate Governance | <input type="radio"/> Human Rights |
| <input type="radio"/> People | <input type="radio"/> Reporting |
| <input type="radio"/> Fair Operating Practices | <input type="radio"/> Corporate Citizenship |
| <input type="radio"/> Stakeholder Engagement | <input type="radio"/> Supply Chain Management |
| <input type="radio"/> Product Stewardship | <input type="radio"/> Security, Safety, Health, and Environment |
| <input type="radio"/> Others (Please specify) | |

Please provide your reasons for selecting the above issues:

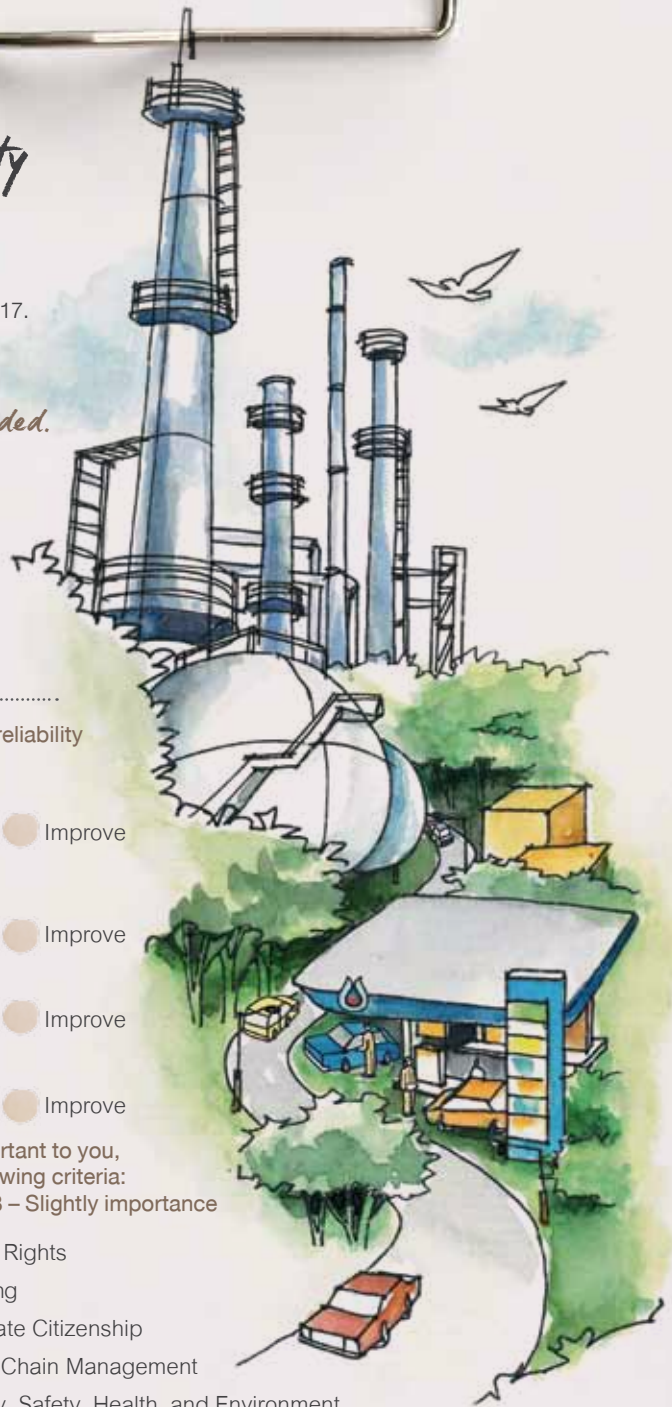
4 In your opinion, does the report cover all material issues relevant to PTT's sustainability?

- ☐ Yes ☐ No

If no, please indicate which issues should be included in future reports:

5 Please provide other comments and suggestions on how PTT can improve its sustainability report in the future:

6 Additional comments on sustainability at PTT:





Tel: 66-2537-1636
Email: sustainability@pttpic.com

PTT Public Company Limited
555 Vibhavadi Rangsit Road,
Chatuchak, Bangkok
10900
Thailand

PTT Group Sustainability Management Project

“ในหนึ่งปีที่ผ่านมา (ปี 12) เราได้เห็น
การเปลี่ยนแปลงในหลายๆด้าน

ปีแรกที่เราได้เจอ



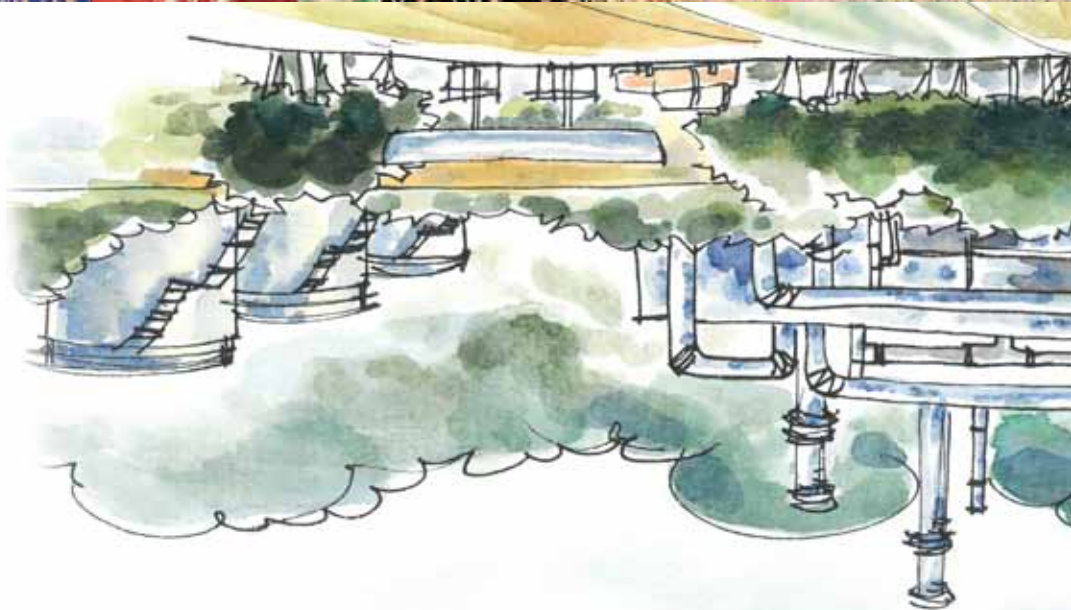
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Reader
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PTT Public Company Limited
Corporate Sustainability Report 2016



บริษัท ปตท. จำกัด (มหาชน)
PTT Public Company Limited

555 Vibhavadi Rangsit Rd.,
Chatuchak, Bangkok 10900, Thailand
Tel. 66 (0) 2537-2000

www.pttplc.com



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