



2017
SUSTAINABILITY REPORT



RESPONSIBLE ORGANIZATION

PTTEP is aware of the responsibilities in the areas we have operations to achieve a balance between energy exploration and energy security and to ensure the well-being of the community and the environment towards being a sustainable organization. As such we continue to develop our knowledge, technology and innovation and stress the importance to comply with the corporate governance, related laws and regulations. We strongly support safety and human rights. The company takes into account all impacts to our stakeholders by ensuring a balance between business, society and the environment.



COVER PHOTO:

In 2011, PTTEP in collaboration with the Royal Thai Navy, Chumphon and Surat Thani provincial administrations, local business operators and communities jointly created the H.T.M.S. Underwater Learning Site Project by placing H.T.M.S. Prab on the sea bed, south of Koh Ngam Noi, Chumphon Province and placing H.T.M.S. Sattakut on the sea bed near Koh Tao, Surat Thani Province. This project aims to preserve the natural coral reefs by using the battleships to create an artificial reef for coral larvae and habitat for marine lives. Moreover, create new undersea learning and diving sites in Thailand which will become internationally renowned.

OPERATIONAL EXCELLENCE

PTTEP operates its business to ensure we grow sustainably through maintaining a balance of operational excellence and emphasizing research and development of technology and innovation as the keys to exploration success and production efficiency. The continual analysis and management of opportunities and risks associated with the business will ensure the company maintains its competitive advantages and consistently delivers long-term value to all stakeholders.



GOOD CORPORATE GOVERNANCE

PTTEP conducts its business with transparency and equality as reflected in the principles of our Good Corporate Governance & Business Ethics. PTTEP is committed to doing its business within the Universal Declaration of Human Rights as well as ensuring the regular promotion and development of all employees on good corporate governance and the code of conduct.

GOOD CORPORATE CITIZENSHIP

PTTEP is committed to improving the quality of life in the communities surrounding our operations under the concept of 'An Explorer and Guardian for Environmental Protection and Sustainable Community Development', which focuses on developing 4 primary aspects: environment, basic needs, education and culture. Not only does it respond to the immediate communities' needs and stakeholders' expectations, but also it reflects our commitment to be a socially responsible company to create a long-term value and sustainable growth for society as a whole.

Free Clinic for the Underprivileged in Indonesia

Even though advances in science and technology play an increasing role in our lives today, we still cannot deny that humans require four basic necessities to survive. These are food, clothing, shelter and healthcare. These needs are considered immediate and minimum, however the reality is that a large number of people still have no access to all of them. This is especially so in the case of healthcare and medication, which are not always an affordable option.

People who live in densely populated or rural areas, away from amenities, are often those who are most affected by the inaccessibility. An example may be found in the Cilincing neighbourhood, north of Jakarta. The sub-district may be part of the Indonesian capital but overcrowded with poor economic conditions, which means that many people have to live in challenging circumstances. Numerous households struggle with various illnesses without access to proper medical care. Some villagers suffer from chronic diseases. When asked why they do not seek medical treatment, the answers are either: "It's too far and I don't have enough money for transportation," or "I don't have enough money to pay for the doctor or medication."

Since the clinic was opened
in 2014, there have been
more than **230,000** patients



Another Mission for PTTEP

PTTEP, which has conducted petroleum exploration and production projects in Indonesia since 2010, recognizes the crucial need for people to have access to healthcare and medicine. It's also the company's wish to see people who cannot access public health services to attain a better quality of life. That is why the PTTEP LKC-Free Health Service Program, better known as the Free Clinic, was born. The Free Clinic project, or Layanan Kesehatan Cuma-Cuma in the local language, is a collaborative effort with Indonesia's non-profit organization Dompot Dhuafa widely known as the "Wallet for the Poor." The project has been running for five years, from 2014 to 2018, with clear achievement goals for each phase.

The construction of the Free Clinic building began in the north of Jakarta, and on completion, the project provided more than 30 doctors and healthcare professionals to care for local residents' living nearby and in the surrounding areas for residents who have difficulties in travelling to the clinic. During the first year, the project dispatched mobile medical units to provide free treatment and medicine to villagers. The locals were perplexed at first. Many of them presumed it would be just another cosmetic attempt



to make the company look good. "The doctor might come by once in a long while at best," many said. After a while, however, the villagers found that the project was a serious and sustained effort at providing healthcare services. The Free Clinic brought doctors to check and follow up on sick people every week. Soon enough, the villagers felt they had someone to rely on. They felt more protected and most importantly of all, happier. When they recovered from their sicknesses, they had enough energy to go to work. They also became free from worries and stress especially when they realized that an emergency service complete with an ambulance was available to them 24 hours.

The Layanan Kesehatan Cuma-Cuma free clinic has reached out to people through curative services but also provide massive promotive activities on preventive care and sanitary living.

Volunteering : Spirit for a Better Life

Prior to the establishment of the Free Clinic, there were a few existing toilets in the neighborhood that are in non-hygienic condition. Realizing the need, PTTEP staff volunteered to build more proper and hygienic toilets in crowded communities such



“ I’m very appreciative of the service provided by the clinic ”

Ms. Rukmini



“ I feel a lot better ever since the clinic came to our community, it means I worry less about illness and sickness ”

Ms. Nurhasaroh

as Marunda where 400 people live, and Rawa Badak which is home to more than 500 people. The move not only provided the two communities with modern toilets but also gave them the possibility to attain a better quality of life. The toilets prompted them to be aware of sanitation and cleanliness, both crucial to disease prevention. Similarly, the villagers began to exercise when they learned of the benefits that it would help boost their immune system. With medical assistance right at hand, they no longer hesitate to see a doctor when falling sick. They realized that they had the means to seek a cure instead of just letting the disease take its own course like before.

Thanks to the Free Clinic, children learned about sanitation early on. For adults with access to mobile phones, the project sent them regular updates on healthcare and health-related information. It's no exaggeration to say that the project used every possible channel to reach the villagers.

The elderly or patients who are unable to walk were not left behind. The Free Clinic donated wheelchairs so that they could join in social activities with other members in the community. Instead of being house-bound and having to wait for visitors to come to them, senior citizens and sick people could go out by themselves. It's amazing to see what a difference a wheelchair can make to the life of an otherwise immobile person. In order to serve the communities best, the Free Clinic strived to provide

them with specialists from a variety of fields be they mother and child, tuberculosis, obesity, malnutrition, AIDS or dentistry.

The Free Clinic gave the gift of sight by offering cataract surgeries to those suffering from the degenerative eye condition. The initiative was widely lauded in the Indonesian media. The same is true for a program to give free medical check-ups to mass transport drivers. The activity provided free service to the highest number of mass transport operators in Indonesia, winning the 2016 Excellent Project Award from Indonesia's Central Bureau of Statistics.

Community : The Foundation of Life Quality

What was beyond expectation is the villagers did not consider the Free Clinic as just a medical facility but a meeting place, a venue where they could exchange experiences, tell one another about bits and pieces of their everyday lives and keep updated on goings on in the community. The unofficial role of the Free Clinic helped unearth the fact that it's not just the lack of sanitation and healthcare services that is threatening the community but also the spread of narcotic drugs.

Officially, the number of drug users in Indonesia stands at four million, with a death rate as high as 33 per day. The statistics are troublesome but they become downright terrifying when considering that these numbers reflect human beings who were

someone's children or grandchildren. Realizing the drugs scourge, the project joined hands with Indonesia's National Anti-Narcotics Agency and a network of more than 30 high schools in launching a "Say No to Drugs" campaign to educate students about the harmful effects of narcotic drugs.

Another health issue threatening the population is cervical cancer, which is the second leading cause of death among Indonesians. How to make sure that people understand the danger? Midwives became the key. Since they are based in the community, they know the residents well. They could also communicate with them directly. For these reasons, the project held training courses and seminars for community midwives around the country. The courses gave them education and information to keep them updated about diseases. To give them moral support, the project also established the Outstanding Midwife award for best practices employed in community healthcare. In 2017, 15 midwives from around the country were recognized with the accolade.

Thanks to its accessibility, the Free Clinic since opening has been able to serve more than 230,000 patients, which exceeded its initial target. Credit, however, is not exclusively due to the project. With a strong voluntary spirit, the public played an integral supporting role. There were also many people who had some wonderful ideas but could not articulate them effectively. The Free Clinic therefore held a health projects contest for people from all over the country. Three winners were selected to serve as leaders in campaigns to provide healthcare for underprivileged communities and further strengthen the project's message.



The Free Clinic held a variety of health promotion activities. The events received overwhelming interest and support from the general public. Among them was a charity run for people with cancer which attracted more than 1,000 participants. The success of this event was evident in the high number of private companies asking to become next year's sponsors.

Giving : The Key to Success

The commitment and sincerity that the PTTEP poured into the Free Clinic project has won it several awards both at the national and international levels. Especially prestigious is the platinum award for excellent community project from the Global CSR Award and Summit. Still, PTTEP will not rest on its laurels. It plans to keep expanding the free medical service programme. Indeed, the company already has in the pipeline a five-year plan for 2018 to 2022.

It is true that the success of the Free Clinic can be measured by statistics such as more than 90,000 people the project treated in 2017 or the number of volunteers ready to give up their own time and their working hours to participate in its activities. In true spirit, however, the mission to give people access to healthcare services is considered accomplished when it enabled people to enjoy better health. At the end of the day, the public wellbeing is the true reward for social work. It's also where the real achievement lies.

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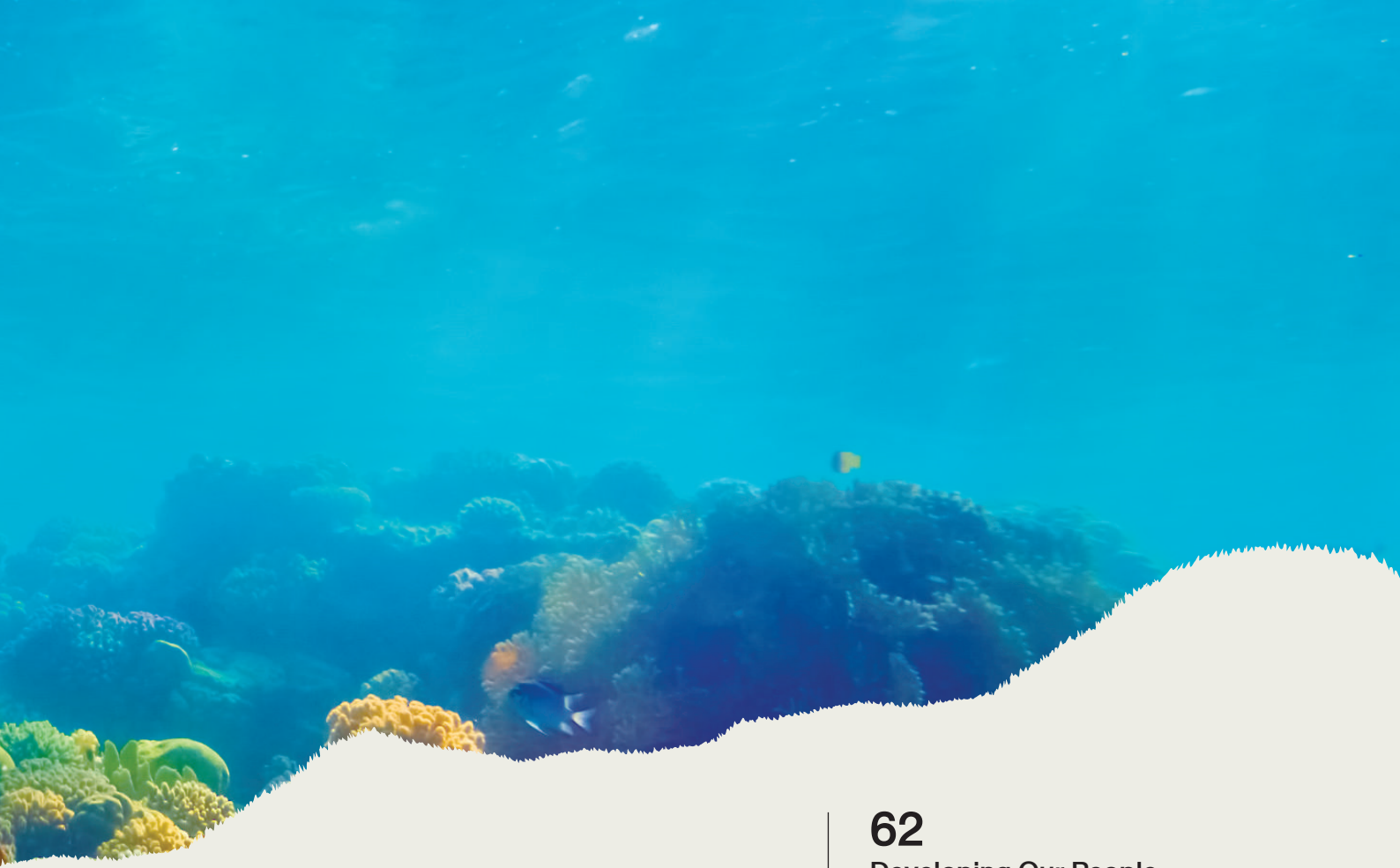
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Message from the CEO and President, Exploration and Production

In fulfilling its vision to be a Leading Asian exploration and production company driven by competitive performance, advanced technology and green practices, PTTEP conducts its business under a sustainability model which focuses on three components to: 1) become a High Performance Organization (HPO), 2) adhere to the principles of Governance, Risk Management and Compliance (GRC), and 3) embed Corporate Social Responsibility (CSR) in all business endeavors.

Under the above model, PTTEP has made impressive strides in sustainability performances. The company was again selected as a member of the 2017 Dow Jones Sustainability Indices (DJSI) in the World Oil and Gas Upstream & Integrated Industry for the fourth consecutive year. In addition, the company was also selected, for the second year, as a constituent of the FTSE4Good Emerging Index.

To become a High Performance Organization, PTTEP improves its operational efficiency with an emphasis on safety, security, health, and environment. In 2017, PTTEP continued the “RESET-REFOCUS-RENEW” strategy to sustain economic growth and enhance the “SPEND SMART to Business Sustainability” project which addresses long-term cost competitiveness. Consequently, the company was able to achieve its 2017 business targets, both in terms of business return and unit cost, as well as its 2017 safety targets. The safety performance was at the same level achieved by leading members of the International Association of Oil and Gas Producers (IOGP).

PTTEP’s continuous efforts on the environment both in climate change and water management started to gain wider global recognition. In 2017, PTTEP was the only company in the South East Asia to have received both awards from CDP which are Climate Change and Water programs at the same time.

On Governance, Risk Management and Compliance, a Corporate Governance and Business Ethics (CG&BE) Perception Survey was



conducted for the first time in 2017, with the target group spanning from internal to external stakeholders. Survey results will be used as feedback for improvement in subsequent CG&BE plans. Additionally, to fulfill our aspiration to become a GRC leader, PTTEP for the first time organized the annual GRC Forum in 2017 that brought together PTT Group GRC management team as well as experts from leading consultancy firms to share knowledge and exchange their thoughts to further strengthen overall GRC management. In the future, PTTEP also plans to expand the GRC Forum to other stakeholders.

PTTEP’s Corporate Social Responsibility (CSR) program spans more than 70 community development projects, in pursuance of our role as “An Explorer with Emphasis on Environmental Protection



and Sustainable Social Development". CSR targets are measured based on stakeholder commitment levels and the CSR long-term performance is evaluated by using the Social Return on Investment (SROI) ratio.

Somporn Vongvuthipornchai
Chief Executive Officer

2017 saw the fruition of PTTEP's unwavering commitments in CSR as the company won the prestigious Asia-Pacific Bronze Stevie Awards in Innovation in Community Relations for two projects i.e. the Stimulation, Intervention, Optimization of Services for Children Layanan Anak (SIOLA) which helps promote the health of pre-school children in West Sulawesi, Indonesia and the Crab Hatchery Learning Centre – a knowledge development center to help generate income for fishermen in Songkhla Province, Thailand.

Last but not least, PTTEP is committed to adhering to the 10 principles of the United Nations Global Compact (UNGC) and this is the third consecutive year which we have incorporated the UNGC Advanced Level principles. Additionally, over the past few years, PTTEP has been driving the Thai business sector towards sustainability through the Global Compact Network Thailand. PTTEP fully embraces the UN's Sustainable Development Goals (SDGs) and has structured our projects and activities in support of the SDGs.

In closing, we would like to thank all our stakeholders for their continued support and cooperation in all the undertakings. PTTEP is steadfast in our commitment to provide energy security and be socially and environmentally responsible in all areas where we operate for continued sustainable growth and stability for all.

Phongsthorn Thavisin
President, Exploration and Production

About This Report

The purpose of this 2017 Sustainability Report is to communicate economic, social and environmental material issues, commitments and annual sustainability performances to stakeholders. The report covers the period from January 1 to December 31, 2017 and includes material issues that are both directly and indirectly related to PTT Exploration and Production Public Company Limited (PTTEP) and assets where PTTEP is the operator.

This report follows the internationally accepted framework set by the Sustainability Reporting Guidelines, Oil and Gas Sector Disclosures (OGSD) of the Global Reporting Initiative G4 (GRI G4) Guidelines in accordance Core Option. Other pertinent international sustainability management reporting frameworks include the Oil and Gas Industry Guidance on Voluntary Sustainability Reporting of International Petroleum Industry Environmental Conservation Association (IPIECA), Dow Jones Sustainability Indices (DJSI), AccountAbility's 2008, AA1000 AccountAbility Principles Standard (AA1000APS) and SASB Materiality Map™ of the Sustainability Accounting Standard Board (SASB).

The reporting process and performance content in this report are under the supervision of the Sustainable Development Council. Selected data on safety, occupational health and the environment, and the description on compliance with the accountability principles from the AA1000APS standard on inclusivity, materiality and responsiveness in the process adopted to prepare this report, have been verified with a limited level of assurance by KPMG Phoomchai Audit Co., Ltd. - the details of which are in the Assurance Statement. Financial statements have been audited by the Office of the Auditor General of Thailand, and the Audit Report can be found in the 2017 Annual Report.

Scope and Reporting Boundaries ^(G4-17, G4-23)

Data on safety, occupational health and the environment in this report is collected from all businesses where PTTEP is the operator, both in and outside of Thailand. There was no significant change from previous reporting periods in the Scope and Reporting Boundaries. Economic and financial data are from the 2017 Annual Report covering all exploration and production projects which PTTEP operates and those in which PTTEP is a joint venture partner. In addition, as PTTEP is a subsidiary of PTT Public Company Limited, PTT Sustainability Report also contains information on PTTEP.

Stakeholder Engagement and Expectations ^(G4-24, G4-25, G4-26)

PTTEP organizes engagement activities with 6 stakeholder groups which are composed of 1) Government agencies and public organizations; 2) Suppliers and contractors; 3) Employees; 4) Shareholders, institutional investors and analysts; 5) Communities and society; and 6) Independent organizations, industrial associations and press & media. The objective of engagement is to solicit feedback and suggestions on economic, social and environmental aspects. PTTEP uses stakeholder input for continuous improvement of business operations. Stakeholder engagement also provides an opportunity for us to communicate on and address stakeholders' interests.

Government agencies and public organizations



Engagement Approach

- Case-by-case meetings
- Monthly meetings with local government agencies
- Reporting to government agencies
- Participation in the government network
- Whistleblowing through CG Hotline

2017 Performance Summary

- Strict compliance with laws relating to business operation
- Communication with government officials for better understanding of their expectations

Suppliers and contractors



Engagement Approach

- Conference, training, and seminars with suppliers and contractors
- Whistleblowing through CG Hotline

2017 Performance Summary

- Supplier Day
- SSHE Contractor Forum
- "CSR with Business Partners" project to participate in philanthropic activities together with suppliers and contractors
- Supplier collaboration activities to create innovation which will boost business efficiency for both the company and our suppliers e.g. Vendor Symposium

Employees



Engagement Approach

- CEO and employee meetings
- Employee engagement surveys
- Regular email and other online communication (Intranet and website)
- Whistleblowing through CG Hotline

2017 Performance Summary

- Continuous promotion of *EP SPIRIT* among employees
- 2017 Employee Engagement Survey

Shareholders, institutional investors and analysts



Engagement Approach

- Annual shareholder general meetings
- Analyst meetings
- Shareholder and investor roadshows
- Quarterly journals
- Shareholder visits to the company
- Whistleblowing through CG Hotline

2017 Performance Summary

- Collaboration and provision of accurate information to relevant stakeholders through a variety of engagement activities

Communities and society



Engagement Approach

- Monthly meetings with community and civil society groups
- Community field visits
- Public hearings
- Philanthropic activities
- Stakeholder Commitment Survey
- Whistleblowing through CG Hotline

2017 Performance Summary

- Continuous efforts to prevent impacts on communities from operations and development of community projects to address the needs of stakeholders, in line with PTTEP social development strategy

Independent organizations, industrial associations and press & media



Engagement Approach

- PTTEP membership of various organizations
- Website
- Facebook (Social Media)
- Press releases and press conferences
- Seminars
- Whistleblowing through CG Hotline

2017 Performance Summary

- Knowledge sharing on energy issues
- Collaboration with external organizations to prevent social and environmental impacts and create innovation that is beneficial for the company and society at large

Stakeholders' Opinions ^(G4-27)

In 2017, PTTEP conducted a stakeholder engagement survey to solicit and gather opinions from all stakeholders (stakeholder inclusiveness) regarding the company's sustainability practices through interviews and survey questionnaires. Key findings are:

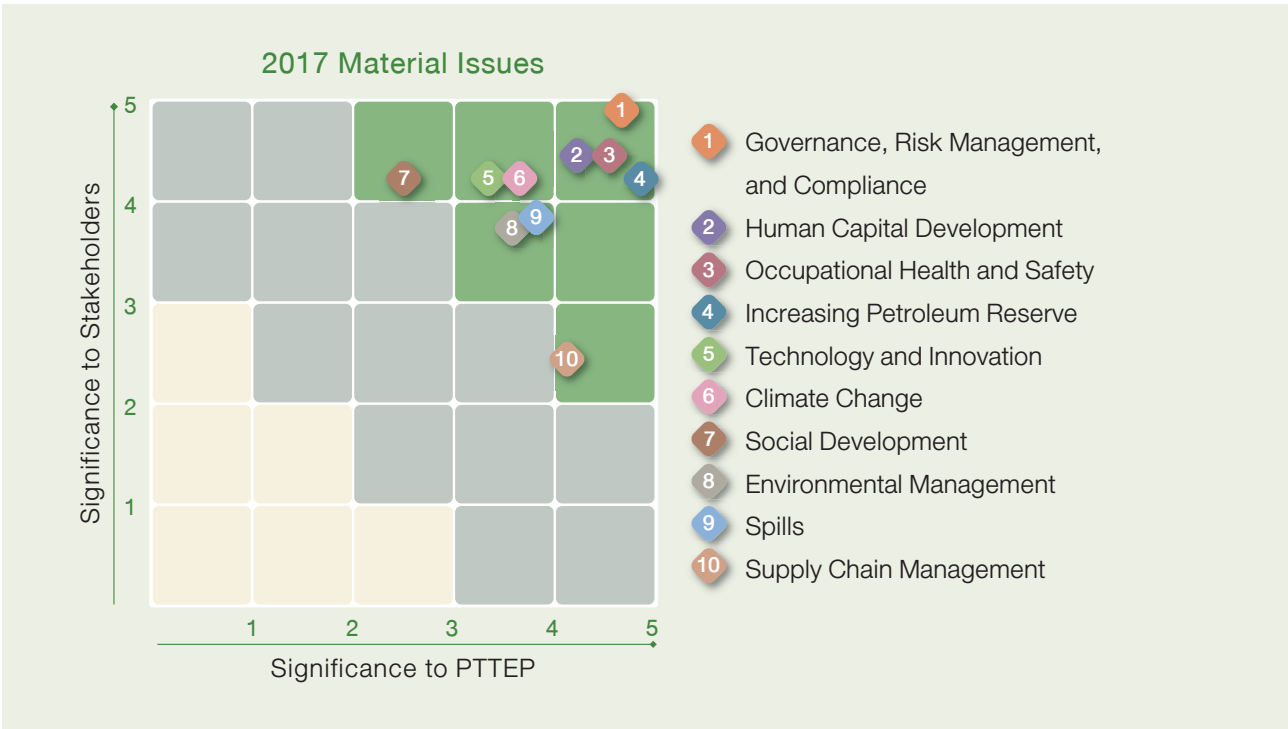
- PTTEP's role is to supply and secure energy for the country now and in the future. PTTEP should increase petroleum reserves and new resources.
- Volatility of oil prices over the past few years has been one of the challenges for the exploration and production industry. PTTEP should reduce and control production costs by utilizing technology and innovation to optimize cost savings and increase operation efficiency.
- PTTEP should focus on enhancing employee competency and developing new exploration and production technologies to maintain its competitiveness.
- PTTEP should emphasize conducting business with integrity and transparency under the free market mechanism.
- PTTEP should place importance on the effective management of oil spill incidents such as impact mitigation, environmental rehabilitation especially concerning coastal management, and effective communication with communities and society at large.
- PTTEP should place emphasis on the energy sector's fast paced transition to a more diversified energy mix by conducting studies and research on renewable energy to address future changes in the energy industry.

Materiality Assessment ^(G4-18)

PTTEP assessed the 2017 material issues based on the importance level for the company and the level of stakeholder interest as per the GRI G4 Guidelines.



Materiality Matrix (G4-19, G4-20, G4-21)



In 2017, PTTEP identified 10 material issues that are highly significant to both stakeholders and the company. The details of each material issue and its impact boundaries are as follows:

Material Issues and Boundaries (G4-19, G4-20, G4-21)

| Material Issues | GRI Material Aspects | Chapters | Impact Boundaries ¹ | | | |
|---|--|------------------------------|--------------------------------|------------|---------------------------|-------------------------|
| | | | PTTEP Internal | Government | Suppliers and Contractors | Communities and Society |
| Governance, Risk Management, and Compliance | <ul style="list-style-type: none"> ● Anti-corruption ● Non-discrimination ● Compliance | Promoting Business Integrity | ◆ | ◆ | ◆ | |
| Human Capital Development | <ul style="list-style-type: none"> ● Training and Education | Developing Our People | ◆ | | | |
| Occupational Health and Safety | <ul style="list-style-type: none"> ● Occupational health and safety ● Project security and process safety² | Ensuring Safe Operations | ◆ | | ◆ | ◆ |
| Increasing Petroleum Reserves | <ul style="list-style-type: none"> ● Economic performance ● Petroleum reserves² | Securing Energy for All | ◆ | ◆ | ◆ | |
| Technology and Innovation | - | Securing Energy for All | ◆ | | ◆ | ◆ |
| Climate Change | <ul style="list-style-type: none"> ● Emissions | Protecting the Environment | ◆ | | ◆ | ◆ |
| Social Development | <ul style="list-style-type: none"> ● Economic performance ● Indirect economic impact | Creating Value for Society | ◆ | | | ◆ |
| Environmental Management | <ul style="list-style-type: none"> ● Energy ● Water ● Emissions ● Effluent and waste ● Compliance ● Local Communities | Protecting the Environment | ◆ | | ◆ | ◆ |
| Spills | <ul style="list-style-type: none"> ● Effluent and waste | Protecting the Environment | ◆ | | ◆ | ◆ |
| Supply Chain Management | <ul style="list-style-type: none"> ● Procurement practices ● Supplier Environmental Assessment ● Supplier Labor Assessment ● Supplier Human Rights Assessment ● Supplier Social Impact Assessment | Promoting Business Integrity | ◆ | | ◆ | |

¹ PTTEP assessed direct and indirect impacts of each material issues on relevant external stakeholders

² Reference from GRI G4 Sector Disclosures - Oil and Gas

Sustainability Management



PTTEP is determined to drive the organization towards sustainability by creating new business opportunities and increasing competitiveness through investment in technology and innovation. Our aims are to build energy security, create mutual growth, and protect the environment.

MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM



FTSE4Good

Continuous efforts to meet international standards on sustainability enabled PTTEP to remain listed in the DJSI (Dow Jones Sustainability Indices) World Index 2017 for the Oil and Gas Upstream & Integrated Industry for 4 consecutive years.

PTTEP was among the 32 oil and gas companies selected in FTSE4Good Emerging Index 2017 for the second year. The index was ranked by FTSE Russell which is the world's leading provider of stock market indices.

To drive the company towards sustainability, a committed and robust governance structure is required to set clear directions, strategies, support implementation, and monitor progress which comprises of the following:

Sustainable Development Governance Structure



Sustainable Development Council

Chaired by the CEO and comprises PTTEP's top management from all Function Groups as council members. It is the highest governance authority in the supervision of the organization's sustainable development and is responsible for providing direction and strategic guidance on sustainability-related issues.



Sustainable Development Working Team

Chaired by our top management in sustainable development roles and comprises representatives from various departments. They are responsible for development of work plans and processes, implementation guidelines, monitoring performances, and reporting progress to the Sustainable Development Council.



Our Contribution to the Sustainable Development Goals

PTTEP supports the United Nations Sustainable Development Agenda. In 2017 all 17 Sustainable Development Goals (SDGs) were reviewed by our Sustainable Development Council where PTTEP will focus on 5 SDGs that are material issues to our business. We are confident that by focusing on these 5 goals through targets, strategies, roadmaps development and implementation, PTTEP will create significant impacts on the outcome of the United Nations Sustainable Development Agenda and contribute to achieving the UN Sustainable Development Goals, as well as accomplishing our long-term business targets.



Goal 3: Good Health and Well-being

PTTEP is committed to protecting the health and safety of everyone wherever we operate; whether it be employees, contractors or properties of the company, to constantly improving the health, safety and livelihood of the community (especially in high density-low income areas lacking access to public healthcare), while maintaining the security of our people and assets. PTTEP implements community development programs which are part of our corporate CSR strategy on the provision of basic needs such as the SIOLA (early childhood development center) Project in Indonesia and Parasite-Free School Project in Myanmar.



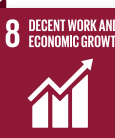
Goal 4: Quality Education

PTTEP regularly promotes insightful information on sustainable development to the Board of Directors and to all employees in order to cultivate a better understanding of sustainability expectations and global practices. The company also provides employee capacity building programs which is part of PTTEP's human capital development.



Goal 7: Affordable and Clean Energy

PTTEP's mission is to provide and secure reliable energy supply to the country by focusing on natural gas production, enhancing energy efficiency in our operations, and supporting local communities to use cleaner energy from biogas generated by local waste which also reduces costs significantly for the community.



Goal 8: Decent Work and Economic Growth

PTTEP's business supports local employment everywhere we operate. The company indirectly contributes to economic growth by paying taxes and petroleum royalties to the government of the country in which we operate. Additionally, PTTEP's community development projects that address basic needs also help improve living standards of the community. This strengthens society as a whole as it is a foundation for national economic development.



Goal 16: Peace, Justice and Strong Institutions

PTTEP is committed to conducting business guided by rigorous good corporate governance and business ethics and continuously promotes transparency and human rights. The company also advocates the anti-corruption policy for all stakeholders with the aspiration to become one of Thailand's leading companies in anti-corruption practices.

In addition to PTTEP's advocacy of the 5 SDGs, the way we conduct our business is in line with all 17 SDGs as demonstrated in the GRI, IR, UN SDGs and UNGC COP for the Advanced Level section at the end of this report.

Performance Summary of 2017 Material Issues

PTTEP sets short- and long-term targets for sustainable development practices in economic, social, and environmental dimensions which are integrated into the Corporate KPIs. These sustainability performances are disclosed in our annual Sustainability Report.

|  Governance, Risk Management, and Compliance | |
|--|---|
| <p><u>Target</u></p> <ul style="list-style-type: none"> ⊙ No corruption in our business operations. ⊙ Assess emerging risks at the corporate level and promptly prepare risk prevention and mitigation measures. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> ⊙ The internal audit result showed no corruption case and employees understood and complied with PTTEP's anti-corruption approach. ⊙ Audit by independent auditor showed no non-compliance with procurement practices and internal control of corruption risk. ⊙ Assessed and identified two emerging risks, namely disruptive technology that would disrupt the energy industry and climate change. Summary report is presented to the Risk Management Committee on a quarterly basis. |
| <p><u>Chapter</u></p> <p>Promoting Business Integrity</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Peace, Justice and Strong Institutions</p> </div> </div> |

|  Human Capital Development | |
|---|---|
| <p><u>Target</u></p> <ul style="list-style-type: none"> ⊙ Increase in average employee competency level by 5% per year. ⊙ Achieve employee engagement at 55% in 2017. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> ⊙ Average competency level increased by 8% in 2017. ⊙ Employee engagement survey shows that 65% of employees engage with the company |
| <p><u>Chapter</u></p> <p>Developing Our People</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Quality Education</p> </div> </div> |



Occupational Health and Safety

Target

- ⊙ Achieve zero fatalities among on-duty employees and contractors.
- ⊙ Lost Time Injury Frequency (LTIF) of employees and contractors totaled less than 0.13 cases per million hours worked in 2017.
- ⊙ Total Recordable Injury Rate (TRIR) of employees and contractors totaled less than 0.88 cases per million hours worked in 2017.

2017 Progress

- ⊙ Zero fatalities of on-duty employees and contractors.
- ⊙ Lost Time Injury Frequency (LTIF) of employees and contractors was at 0.10 cases per million hours worked in 2017.
- ⊙ Total Recordable Injury Rate (TRIR) of employees and contractors was at 0.75 cases per million hours worked in 2017.

Chapter

Ensuring Safe Operations

Relevant SDGs



Good Health and Well-being



Increasing Petroleum Reserves

Target

- ⊙ Maintain proved reserve life ratio (R/P Ratio or 1P/Production) at no less than 7 years.
- ⊙ Maintain return on capital employed (ROCE) above the industry average in 2017.
- ⊙ Increase the proportion of natural gas production to at least 70% in 2017.

2017 Progress

- ⊙ Proven R/P Ratio or 1P/Production is at 5 years.
- ⊙ Return on capital employed (ROCE) was higher than the industry average with an EBITDA Margin of 5.03%.
- ⊙ Natural gas production accounted for 73% of all production (barrel of oil equivalent).

Chapter

Securing Energy for All

Relevant SDGs



Affordable and Clean Energy



Decent Work and Economic Growth



Technology and Innovation

Target

- ⊙ Set clear technology and innovation targets and KPIs focusing on technology to
 - Increase Exploration Success
 - Enhance Production
 - Green Practice
 - Petroleum Related Technology

2017 Progress

- ⊙ Achieved technology and innovation targets as planned.

Chapter

Securing Energy for All

Relevant SDGs



Industry, Innovation and Infrastructure



Climate Change

Target

- ⊙ Reduce greenhouse gas emissions intensity by at least 20% and 25% by 2020 and 2030 respectively, compared to the 2012 base year.
- ⊙ Reduce greenhouse gas emissions by 208,900 tonnes of CO₂ equivalent in 2017.
- ⊙ Reduce energy consumption intensity by 5% by 2020 compared to the 2012 base year.

2017 Progress

- ⊙ Reduced greenhouse gas emissions intensity by 2.6% compared to the 2012 base year.
- ⊙ Reduced greenhouse gas emissions by 308,080 tonnes of CO₂ equivalent in 2017.
- ⊙ Reduced energy consumption intensity by 1.4% compared to the 2012 base year.

Chapter






Protecting the Environment

Relevant SDGs



Climate Action

|  Social Development | |
|--|--|
| <p><u>Target</u></p> <ul style="list-style-type: none"> Conduct public engagement at every project during the exploration and production phase. Stakeholder engagement survey result achieve “Commitment/Support” level (the highest level) by 2020. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> Conducted public engagement at all projects in the production phase. In 2017, PTTEP did not have any project in the exploration phase. Stakeholder engagement survey result in 2016 achieved “Understand” level (level 2). The next stakeholder engagement survey will be conducted for overseas projects in Myanmar and Australia in 2018. |
| <p><u>Chapter</u></p> <p>Creating Value for Society</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Good Health and Well-being</p> </div> <div style="text-align: center;">  <p>Quality Education</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p>Sustainable Cities and Communities</p> </div> </div> |

|  Environmental Management | |
|--|---|
| <p><u>Target</u></p> <ul style="list-style-type: none"> Reduce hazardous waste to landfill lower than 0.5% of total hazardous waste from Thailand operations in 2017. Develop Biodiversity Action Plan (BAP) for operations in areas of high biodiversity risks. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> Reduced hazardous waste to landfill to 0.0002% of total hazardous waste from Thailand operations in 2017. There was no operation in areas with high biodiversity risks which required a BAP. |
| <p><u>Chapter</u></p> <p>Protecting the Environment</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Clean Water and Sanitation</p> </div> <div style="text-align: center;">  <p>Responsible Consumption and Production</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p>Life Below Water</p> </div> <div style="text-align: center;">  <p>Life on Land</p> </div> </div> |

|  Spills | |
|---|---|
| <p><u>Target</u></p> <ul style="list-style-type: none"> Reduce oil and chemical spill to lower than 0.9 tonnes per million tonnes of petroleum production in 2017. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> Oil and chemical spill was at 0.26 tonnes per million tonnes of petroleum production in 2017. |
| <p><u>Chapter</u></p> <p>Protecting the Environment</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;">Responsible Consumption and Production</div> </div> |

|  Supply Chain Management | |
|---|---|
| <p><u>Target</u></p> <ul style="list-style-type: none"> Conduct environmental, social, and governance (ESG) on-site audit for 5 high-risk suppliers by 2018. Reduce supply chain management cost by 79 million USD in 2017. Environmentally-friendly office supplies purchased account for 50% of total spending. Develop purchasing criteria for environmentally-friendly products and services to support our green procurement effort. | <p><u>2017 Progress</u></p> <ul style="list-style-type: none"> Conducted 2 environmental, social, and governance (ESG) on-site audits for high-risk suppliers in 2017. Reduced supply chain management costs by more than 99 million USD in 2017. Environmentally-friendly office supplies purchased accounted for 41% of total spending in 2017. 6 environmentally-friendly products and services were assessed according to the Green Procurement Practice Guide by Thailand Environment Institute in 2017. |
| <p><u>Chapter</u></p> <p>Promoting Business Integrity</p> | <p><u>Relevant SDGs</u></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Decent Work and Economic Growth</p> </div> <div style="text-align: center;">  <p>Responsible Consumption and Production</p> </div> </div> |

Securing Energy for All



PTTEP's proactive business strategy designed to anticipate the challenges amidst economic uncertainty and oil price fluctuation is the key to our ability to address different challenges. Our strategy enables us to firmly continue our

business to contribute to the energy security of the country which is the main driver to enhance the livelihood of the people as well as economic growth.

Business Strategy

PTTEP continues to implement the “RESET-REFOCUS-RENEW” strategy which focuses on creating opportunities for energy security in the long run. This long term company strategy sets the foundation for how we conduct our business to become a leading exploration and production company in Asia.



Targets and 2017 Performance

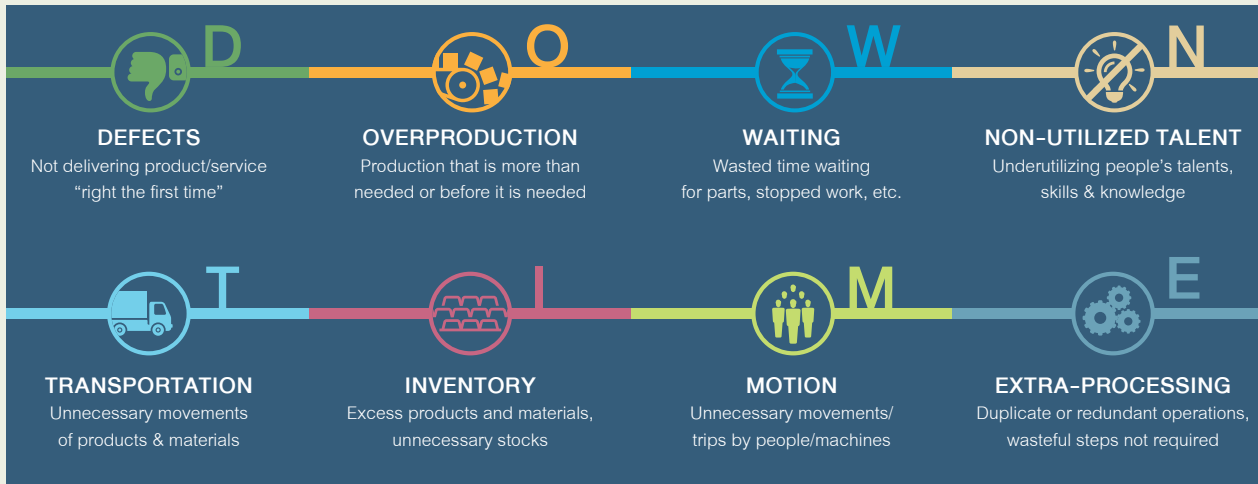
| Return on Investment | Business Sustainability |
|--|--|
| <ul style="list-style-type: none"> ● Achieved a return on capital employed (ROCE) of 5.03%, higher than the industry average in 2017. ● The unit cost was at 29.05 USD per barrel of oil equivalent which is lower than the target of 30 USD per barrel of oil equivalent when compared to other petroleum exploration and production companies in Asia. | <ul style="list-style-type: none"> ● Proved reserves life ratio (R/P Ratio or 1P/Production) of 5 years while our target was set to at least 7 years. |

The SPEND SMART to Business Sustainability project is continuously implemented in PTTEP. The project assisted in driving the company towards smart budget management and enhanced our long term competitiveness amongst top companies in the same industry. In 2017, this project successfully achieved its targets regarding the company’s return on capital employed (ROCE) and unit cost.

PTTEP reduced cost by **200** million USD, more than the target of 179 million USD.

Employees contributed to the SPEND SMART project by initiating more than **500** projects to increase efficiency

In 2017, PTTEP implemented LEAN Process to optimize our work process and increase efficiency in terms of cost, time, system, standard, and personnel allocation. LEAN Process was the continuation of SPEND SMART project to reduce production time and control costs. The implementation of LEAN techniques to increase efficiency was based on eight factors as follows:



Additionally, the company also established a "LEAN Task Force" to collaborate and consult with other functions to analyze, screen, and propose ideas or projects that would help increase process efficiency in line with the objectives of the SPEND SMART project. In 2017, 23 projects were approved and implemented such as the Smart E Operation project which is a digitalization of the work system to increase efficiency at our offshore operation at Greater Bongkot North Project and the Permit to Work Standardization project at our onshore operation, the S1 Project, which improved the system's efficiency and reduced processing time.

Reserves and Production Strategy

The company is aware that petroleum reserves are the key contributor to sustain our exploration and production business for both the present and the future; whereby, acknowledging this fact, PTTEP has concrete directions and plans in place to accelerate the increase of petroleum reserves and production for 2017 as follows:

- Sustained production capacity in existing projects with low operating cost by maximizing condensate production from the projects in Gulf of Thailand together with increasing production in S1 Project, Myanmar Projects and Montara Project.
- Enhanced additional petroleum reserves for both short term and long term through participation in the bidding process of expiring concessions in the Gulf of Thailand, including the Bongkot and Erawan concessions. The company is well positioned and ready to be a part of the upcoming biddings within the Ministry of Energy's timeframe. Additionally, the company strives to push forward the Final Investment Decision (FID) of pre-development projects including Mozambique Rovuma Offshore Area 1 Project, Algeria Hassi

Bir Rekaiz Project, the Vietnam B & 48/95 Project, Vietnam 52/97 Project, and Contract 4 (Ubon Field). More importantly, the company pursues M&A deals with particular focus on producing assets or assets in the final stages of development especially in regions that PTTEP has expertise in such as Southeast Asia. Not only that, PTTEP also focuses on other areas of high petroleum potential that have moderately low risks, market readiness, and attractive returns. PTTEP is also focused on accelerating activities in exploration projects that are in the current portfolio with particular focus on Myanmar and Malaysia, while also seeking new opportunities in the company's strategic regions.

- Expanded cooperation in the LNG value chain with PTT in order to achieve business growth and secure Thailand's energy security by seeking strategic investment opportunities in LNG projects globally. PTT Global LNG Company Limited (PTTGL), is owned by PTT and PTTEP, acquired from Petronas, a 10% stake in MLNG Train 9, an LNG liquefaction plant in Malaysia, with a nameplate capacity of 3.6 million tonnes per annum.

Business Overview

PTTEP's core business is the exploration and production of petroleum both domestically and globally, (Thailand and abroad). As of December 31, 2017 PTTEP had 36 petroleum exploration and production projects in 10 countries: 13 projects were under the exploration phase and 23 projects were under the commercial production phase.

Thailand: 14 projects

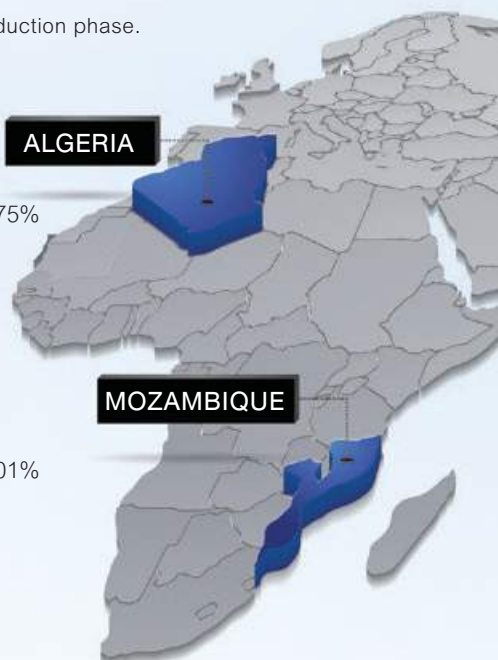
- | | |
|---|--|
| <p>1 Bongkot Project Participation Interest 44.4445% Operator PTTEP</p> <p>2 S1 Project Participation Interest 100% Operator PTTEP</p> <p>3 PTTEP 1 Project Participation Interest 100% Operator PTTEP</p> <p>4 B6/27 Project Participation Interest 100%² Operator PTTEP</p> <p>5 Arthit Project Participation Interest 80% Operator PTTEP</p> | <p>6 L22/43 Project Participation Interest 100% Operator PTTEP</p> <p>7 L53/43 & L54/43 Project Participation Interest 100% Operator PTTEP</p> <p>8 E5 Project Participation Interest 20% Operator ExxonMobil</p> <p>9 Contract 3 Project Participation Interest 5% Operator Chevron</p> <p>10 Contract 4 Project Participation Interest 60% Operator Chevron</p> |
|---|--|

Overlapping Area: 2 projects

- 1** G9/43 Project
Participation Interest 100%
Operator PTTEP
- 2** MTJDA Project
Participation Interest 50%
Operator CPOC

Overseas: 20³ projects Myanmar

- | | |
|--|--|
| <p>1 Myanmar M3 Project Participation Interest 80% Operator PTTEP</p> <p>2 Myanmar M11 Project Participation Interest 100% Operator PTTEP</p> <p>3 Zawtika Project Participation Interest 80% Operator PTTEP</p> <p>4 Yadana Project Participation Interest 25.5% Operator TOTAL</p> | <p>5 Yetagun Project Participation Interest 19.31784% Operator Petronas</p> <p>6 Myanmar MD-7 Project⁴ Participation Interest 50% Operator PTTEP</p> <p>7 Myanmar MOGE 3 Project Participation Interest 75% Operator PTTEP</p> |
|--|--|



- 11** G4/43 Project
Participation Interest 21.375%
Operator Chevron
- 12** Sinphuhorm Project
Participation Interest 55%
Operator PTTEP
- 13** B8/32 & 9A Project
Participation Interest 25.001%
Operator Chevron
- 14** G4/48 Project
Participation Interest 5%
Operator Chevron

Vietnam

- 8** Vietnam 9-2 Project
Participation Interest 25%
Operator HV JOC
- 9** Vietnam 16-1 Project
Participation Interest 28.5%
Operator HL JOC
- 10** Vietnam B & 48/95 Project
Participation Interest 8.5%
Operator Petrovietnam
- 11** Vietnam 52/97 Project
Participation Interest 7%
Operator Petrovietnam

¹ Excluding Indonesia Semai II and Indonesia Malunda projects for which PTTEP has submitted relinquishment documents to the Government of Indonesia and is waiting for the official approval.

² PTTEP received an approval from the Ministry of Energy to receive the transfer of the participating interests in the B6/27 Project from other joint partners on September 22, 2017. As a result, its participating interests increased from 60% to 100%.

³ Excluding the Myanmar PSC G & EP 2 Project for which PTTEP had submitted a request to terminate and return the exploration block to Government of Myanmar, after fulfilling of the requirements of the Production Sharing Contract which was effective on August 31, 2017.

⁴ PTTEP received the official approval from the Government of Myanmar for the transfer of the participating interests in the Myanmar MD-7 Project to TOTAL E&P Myanmar on February 22, 2017. As a result, its participating interests decreased from 100% to 50%.

⁵ PTTEP Australasia Project holds many petroleum blocks which have varying participation interests ranging from 90-100%.



Indonesia

- 12 Natuna Sea A Project
 Participation Interest 11.5%
 Operator Premier Oil

Malaysia

- 13 Sarawak SK410B Project
 Participation Interest 42.5%
 Operator PTTEP

Algeria

- 14 Algeria Hassi Bir Rekaiz Project
 Participation Interest 24.5%
 Operator PTTEP

- 15 Algeria 433a & 416b Project
 Participation Interest 35%
 Operator GBRS

Australia

- 16 PTTEP Australasia Project
 Participation Interest 90-100%⁵
 Operator PTTEP

Canada

- 17 Mariana Oil Sands Project
 Participation Interest 100%
 Operator PTTEP

Mozambique

- 18 Mozambique Rovuma Offshore Area 1 Project
 Participation Interest 8.5%
 Operator Anadarko

Brazil

- 19 Barreirinhas AP1 Project
 Participation Interest 25%
 Operator BG Brasil
- 20 Brazil BM-ES-23 Project
 Participation Interest 20%
 Operator Petrobras

Production phase

Exploration phase

Technology and Innovation

PTTEP is committed to becoming an organization driven by applied research and technology development with a focus on green practices and excellent knowledge management to create sustainable competitiveness, and in alignment with the direction of changing global trends and energy industry. The company focuses on developing research and technology and applying new technology and knowledge management to enhance the organization's competitiveness towards sustainability.

Technology Development

PTTEP has a technology management system which enables our efficient operations. The Technology Development Steering Committee (TDSC) consisting of representatives from different functions from the organization and the Technology and Knowledge Management Division are responsible for overseeing the research and technology development policy and projects to be in line with the company's business plans and strategies.

PTTEP aims to develop technology and innovation in order to enhance the efficiency of petroleum exploration and production that will enable sustainable growth. The company collaborates with government research institutions, academic institutions, and suppliers in Thailand and oversees the building of capability and efficiency in the area of technology development to ensure that the company is able to keep up with the rapidly changing world.

Our innovation and technology projects are screened by the Sub-Technology Development Steering Committee (Sub-TDSC) in accordance with the company's technology development process. The Sub-TDSC is responsible for screening and reviewing the prioritization of projects in order to efficiently allocate budget and monitor progress. In addition, the Sub-TDSC also provides suggestions to improve project efficiency in line with PTTEP's policies and strategies.

Target

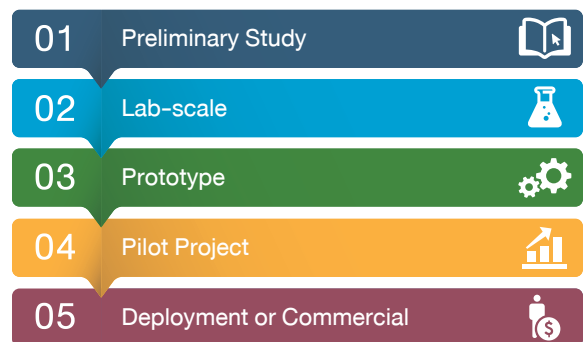

PTTEP strives to be an organization of excellence in the aspects of operation, financial returns, and investment. The key objectives of research and development of technologies are:

-  INCREASE EXPLORATION SUCCESS
-  ENHANCE PRODUCTION
-  GREEN PRACTICES
-  PETROLEUM RELATED TECHNOLOGY



PTTEP sets clear targets and monitors the progress of our technology and innovation development. In 2017, PTTEP's technology and innovation performance exceeded our target.

Technology Development Process

In 2017, PTTEP allocated a budget of **15** million USD for technology development accounting for **10%** of PTTEP's 2016 net profit. There are a total of **60** on-going technology development projects and **2** projects which have been registered for patent.

In addition, PTTEP established the company's Digital Transformation Plan in compliance with PTT Group's policy acquiring digital technology, the Internet of Things, robotic technology, and artificial intelligence to increase operational efficiency through the analysis

of petroleum exploration and production processes in a timely manner. Moreover, the aforementioned technology also covers the safety system and inspection of important equipment that enable the company to set up operational and maintenance plans appropriately.

In 2017, key achievements in PTTEP Technology Development include:

Decommissioning Technology

PTTEP is aware that there are potential risks from decommissioning operations in the future and is in the process of studying various engineering techniques to help mitigate any potential environmental impacts through various studies and research. The company is now studying the Subsea Pipeline Decontamination project in pilot scale, in collaboration with the National Science and Technology Development Agency (NSTDA) and Dacon Inspection Services Co.,Ltd. to find innovative processes for sampling of environmental parameters and testing of the subsea pipeline system. Such process has been patented and received a Gold Award from PTT Group RD&T Achievement Awards 2017 and The Asset Best Initiative awards from the Asset Corporate Awards 2017 organized by 'The Asset Magazine'.

Geophysical Exploration Technology

The company conducted a study on applying electromagnetics to monitor the movement of different liquid electrical conductors in the petroleum reservoir during the production using the waterflood replacement method. The study involved a field survey that led to the first development of data analysis based on electromagnetics in Thailand. The results of the study will help improve the efficiency of the waterflood method. This project is a collaboration between PTTEP, Japan Oil, Gas and Metals National Corporation (JOGMEC) and Mahidol University.

Robotic Technology

PTTEP, Kasetsart University and Mermaid Maritime Public Company collaborated on the research and development of Autonomous Underwater Vehicle (AUV) to reduce costs and improve the efficiency of subsea equipment inspection such as oil and gas pipelines. Currently, the prototype is under development to be tested in the field.

A research on the development of In-pipe Inspection Robot (IPIR) to help with the accurate analysis of damage and conditions inside the pipelines. PTTEP, King Mongkut's University of Technology North Bangkok and Silpakorn University collaborated to enhance the capacity of the robot in the future to be able to collect materials, measure the size of pipelines using lasers, and precisely identify the location of the robot in the pipeline.

In addition, the Beach Cleaning Robot project has successfully developed a prototype robot that is cost-efficient and effective to help reduce environmental pollution along the community's beaches. The robot is a result of green technology that is driven by PTTEP's commitment to protect the environment as stated in our policy. The collaboration between PTTEP and Prince of Songkla University on this project also promotes the advancement of technological studies that can be of useful application in the future.



PTTEP received the Outstanding Innovative Company Award at the SET Awards 2017. This achievement demonstrated our commitment and reflected our outstanding innovations as a way to promote innovation development at the national level.

Knowledge Management

PTTEP promotes employees to share knowledge and experiences from work, and apply them regularly. The company also focuses on enhancing the capability of creative problem-solving process and innovation creation. In addition, the company has developed a 5-year strategic plan for knowledge management covering the aspects of resources, process management, and knowledge management technologies. PTTEP conducts annual knowledge management assessment and sets a target of knowledge management as a part of all employee performance assessment in 2020. The knowledge management assessment outcome shows that the company has continuous development as planned.

In 2017, PTTEP conducted activities and programs for developing knowledge management by focusing on the regular communication

of top management on knowledge management, knowledge management assessment, development of knowledge management and promoting employee involvement in knowledge management. The company also surveyed needs from employee representatives to analyze opportunities for improvement on knowledge management database (KM Portal) to be easily accessed by employees.

Furthermore, PTTEP has knowledge management database system (KM Portal) which employees can access for study, research, lesson learned or knowledge retention. The company's knowledge retention system also enables retiring employees at management level to pass on their knowledge to the next generation enabling them to learn and create value-added innovation for the petroleum industry in the future.





In 2017, PTTEP organized 'Knowledge Management Week 2017' (PTTEP KM Week 2017) under the concept of 'Energy Resilience through Technology, Innovation and Knowledge Management' to present technology and innovation useful for the operation and promote experience sharing among employees, functions, the government sector and academic institutions in the area of petroleum exploration and production. The integration of knowledge is in line with the vision of knowledge management and sustainable growth.



There were a total of 176 technical papers submitted by PTTEP and external parties and 55 innovations submitted at the 5th Innovation Awards. In addition, PTTEP is committed to driving award-winning innovations to be successfully developed.

Promoting Business Integrity



Governance, Risk Management and Compliance (GRC)

PTTEP adheres to GRC principles to address uncertainty while acting with integrity in accordance with external and internal requirements which ensures our achievement of the company's objectives and strengthens trust by all stakeholders. In 2017, PTTEP established the Corporate Affairs and Assurance Group to coordinate the integration of GRC principles in business operations.

The Group integrated several departments which carried out work in the second line of defense, including the Corporate Governance Department, the Enterprise Risk Management and Internal Control Division, and the Compliance Department. We also appointed GRC Champions, GRC Leaders, and GRC Working Team which comprised representatives from GRC-related departments and the Internal Audit Division.

Good Corporate Governance and Business Ethics

PTTEP continues to improve its Good Corporate Governance and Business Ethics (CG&BE) to ensure that business operations are sustainable, transparent, fair, efficient, ethical and auditable in accordance to the Corporate Governance Codes established by the Securities and Exchange Commission and the Thai Institute of Directors, as well as other international best practices.

PTTEP's Board of Directors (The Board), executives, employees, subsidiaries, and business partners are required to sign a commitment form to uphold, observe, and adhere to the provisions of PTTEP's Good Corporate Governance and Business Ethics. PTTEP also encourages those of its joint ventures that are not under its oversight and control to uphold the Good Corporate Governance and Business Ethics of PTTEP as appropriate.

PTTEP Board of Directors (the Board) recognizes the leading role in shaping and strengthening the company's corporate governance for sustainable value creation. In 2017, the Board initiated PTTEP's first CG&BE Perception Survey which was also set as one of the Board's KPI for 2017. The survey was undertaken by an external independent consultant which covered more than 3,500 respondents including key internal and external stakeholders from five groups: 1) Regulators and government agencies; 2) PTTEP key project joint venture partners; 3) Suppliers and contractors; 4) Community representatives; and 5) Executives and employees within the PTTEP Group (excluding the Board).



The results of the survey are used for developing the "Board's Good Corporate Governance and Business Ethics Improvement Plan" to address stakeholder expectations that are significant to our business. The plan includes topics such as public disclosure of information, communication on anti-corruption practices and whistleblowing policy.

"I have always believed that the key to success in business involves becoming a company with strong Good Corporate Governance and Business Ethics. At PTTEP, we too can become a company with strong CG&BE if all PTTEP staff collaborate in the effort and if all of us embrace the principles of CG&BE in our personal values. Adopting such principles in our own lives builds up further protection for our business, empowering it to continue operating with efficiency and transparency. In sum, effective CG&BE ensures success in achieving our goals of growth with dignity, sustainability, and building of confidence and trust among all our stakeholders, and ultimately becoming a recognized representative of a company with solid CG&BE for our society and our country."

Somporn Vongvuthipornchai
Chief Executive Officer

Facts regarding the procurement with Rolls-Royce

On January 17, 2017, the US Justice Department announced the Rolls-Royce's bribery charges, which allegedly involved officials at state-owned oil and gas companies in many countries, including Thailand. PTTEP immediately set up a committee comprising of executives, who were not involved with the Rolls-Royce equipment procurement, to conduct fact-finding and submit a report to the Board of Directors within 30 days. PTTEP completed and submitted the information to PTT Public Company Limited (PTT) in order to incorporate all the facts and report to the National Anti-Corruption Commission (NACC). The company is ready to cooperate with NACC and will take legal and disciplinary action against anyone found guilty in this matter.

We believe in the transparent procurement system we have developed. The company has developed and implemented various anti-corruption procedures and guidelines as a preventative measure against corruption risk. They include Vendor Registration, implementation of an Integrity Pact to allow external parties to monitor the bidding of high-value projects, Vendor Sustainable Code of Conduct that encourages all qualified vendors to sign and comply with the company's rules and regulations, random review of possible conflicts of interest among related persons in the procurement process, assessment of procurement and the whistleblowing reporting system for both internal and external parties.

PTTEP is committed to continuously improve our procurement process. We also assigned an independent third party auditor to audit PTTEP's procurement process and the internal controls which was identified as a means to prevent corruption risks and to provide developmental observations. The independent third party auditor reported that no significant findings were uncovered. Some developmental observations were noted and have been embedded in PTTEP's procurement process.

In addition, the company also encouraged its suppliers to participate in the certification process of Thailand's Private Sector Collective Action Coalition against Corruption (CAC) as well as maintaining the best practices on anti-corruption in order to create a good business culture that is transparent and corruption-free to ensure the effectiveness and transparency of the company's operations and procurement systems.










Anti-corruption

PTTEP fights against corruption in every form, with no exceptions. We strictly follow and comply with all anti-corruption laws in every place in which we do business and are never involved, whether directly or indirectly, in any corrupt practices. To enforce this in the company, PTTEP also focuses on fostering an anti-corruption culture through different anti-corruption programs. Throughout 2017, several anti-corruption programs were initiated, such as the launch of an e-learning course on corruption prevention which includes testing and the continuous adoption of our “No-Gift policy”. In 2017, the Internal Audit Division conducted the Standard of Practice for Anti-Corruption compliance audit by focusing on

the high risk units. No corruption or bribery were found. The management and employees understand PTTEP’s anti-corruption measures. PTTEP continues to emphasize the importance of communication on anti-corruption efforts to foster a strong anti-corruption culture

Reporting of Breaches

In 2017, PTTEP received a total of eight complaints through the Whistleblowing Regulations (CG Hotline) and HR Regulations. Complaints from 2016 and 2017 are summarized and compared in the table below.

| | | 2016 | 2017 | Change |
|---|--|----------|----------|---------------|
|  | Whistleblowing cases (Number) | 9 | 8 | ▼ 11% |
|  |  External reporter | 4 | 4 | - |
| |  Internal reporter | 4 | 2 | ▼ 50% |
| |  Anonymous reporter | 1 | 2 | ▲ 100% |
|  | Accepted cases after considering evidence and witnesses (Number of cases) | 6 | 7 | ▲ 17% |
|  | Wrongdoing cases (Number of cases) | 4 | 3 | ▼ 25% |

Results of investigations from the seven 2017 cases are as follows:

- There were three cases of wrongdoing which did not violate the anti-corruption policy and the damages were not significant.
 - 1) One case was related to the non-compliance of SSHE Policy and the wrongdoer was punished with a verbal warning.
 - 2) One case was related to the non-compliance of HR Regulations and the wrongdoer was punished with a verbal warning.

- 3) Another case involved fraud by a sub-contractor company which was subsequently blacklisted.
- There were four complaints which were determined to have no grounds for wrongdoing and were not deemed as cases of persecution or defamation.
 - The results of the complaint investigations were subsequently reported to the complainants, the Audit Committee or the Corporate Governance Committee (as the case may be), and the Board which were used for further improvements of the company’s internal control measures.

Risk Management

Failure to manage risks for petroleum exploration and production businesses could result in severe impacts to the company, in terms of financial performance, security, occupational health and safety, environmental performance, image and reputation, and stakeholders' confidence. PTTEP actively manages risks and ensures business continuity by controlling and preventing all forms of risks As Low As Reasonably Practical (ALARP) according to international best practices. PTTEP considers both internal and external risks for every aspect of the operations.

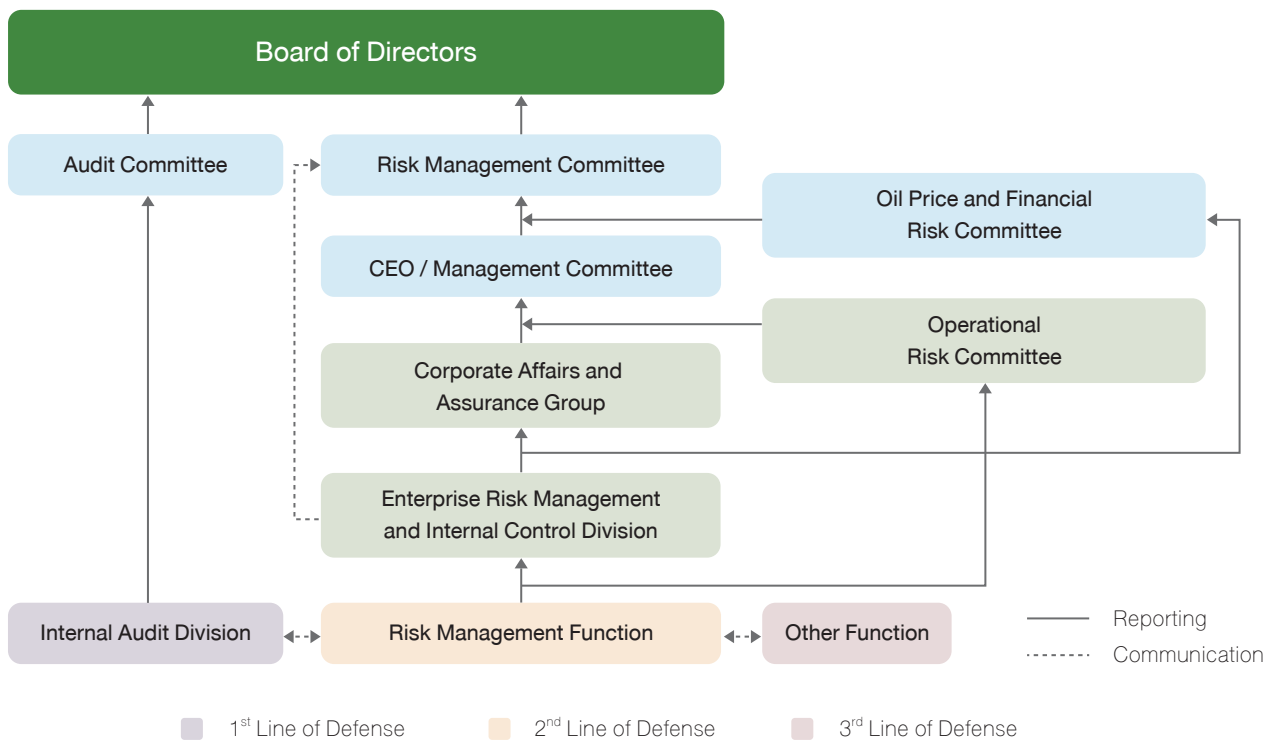
Risk Governance

PTTEP's Risk Governance Framework defines risk management oversight and responsibilities for all personnel in PTTEP, from the Board of Directors, management, to the operational level. This ensures the effectiveness of risk management implementation

where all corporate risks are managed, monitored and reported respectively in a systematic and timely manner

PTTEP's risk management process complies with ISO 31000. We manage risks at all levels throughout the organization, from group level to division, project, function, process, and investment. For two consecutive years since 2016, the company's success in Enterprise Risk Management system and Business Continuity Management system has been accredited by the ISO 22301:2012 (Business Continuity Management) certification, conferred by the British Standards Institution (BSI). The certification ensures that our business continuity management is up to international standards and is effectively integrated into our Enterprise Risks Management system. The company has also developed crisis management plans to effectively protect stakeholders' interests. In the future, we also plan to expand the Business Continuity Management to other projects we operate.

Risk Management Structure



PTTEP's risk management structure can be divided into three levels or known as the three lines of defence to monitor and review enterprise risk management in every dimension related to the company. This model allows employees from every level, ranging from department level to the Board of Directors, to participate in the risk management process and creating an effective Enterprise Risk Management system.

PTTEP analyzes and assesses its Corporate Risk Profile annually to assess the risk factors important to business operations, including strategic and investment risk, financial and market risk, stakeholder risk, political and legal risk, operational risk and capital project risk. The company has comprehensive risk prevention measures and an attentive monitoring system which reports to the Risk Management Committee quarterly. Details of risk management and mitigation measures are outlined in the company's Annual Report.

Emerging Risks

The company assesses emerging risks to reduce uncertainty and mitigate the risk of volatile business results in the future. The recent assessment identified disruptive technology and climate change as our emerging risks.

Disruptive Technology that would Disrupt the Energy Industry

Rapid technological advancement has accelerated research and development (R&D) efforts in alternative energy, making it cheaper and more accessible. These technologies include improvements in electrical energy storage devices and systems, as well as electric vehicles which are emerging risks for PTTEP's petroleum exploration and production business. If more consumers were to adopt technologies enabled by alternative energy, there would be less demand for conventional fuel and reduced oil usage.

To mitigate the impact of this particular emerging risk, PTTEP developed the New Business Opportunities Roadmap, established a New-gen Explorer Team (NEXT) and restructured the organization to be more versatile in order to be able to quickly seize new business opportunities. In addition, the company has pursued acquisition of natural gas producing assets in the short term, since natural gas is currently in high demand. As a long-term solution, PTTEP has also started to explore acquisitions of natural gas assets with strong exploration potential.

Climate Change

Climate change, undeniably, has immense adverse environmental impacts including the increased frequency and intensity of storms, and severe weather conditions causing floods which poses as a threat to PTTEP's business. Whether it be damage to production platforms from cyclones and inaccessible production sites due to severe flooding, to future carbon taxes imposed by governments in countries where we operate, the adverse effects of climate change would increase production costs for PTTEP in the future. To address and mitigate these emerging climate change risks, PTTEP reviewed the standards of production base design, production processes and production platform safety measures to prepare for severe weather conditions; comply with carbon tax regulations in countries with carbon tax requirements; and implemented internal carbon pricing for countries which have not ratified carbon tax regulations as a short term plan. Regarding climate change mitigation measures, the company has developed plans to reduce greenhouse gas emissions intensity by 20% as a short-term target and 25% as a medium-term target by 2020 and 2030 respectively, as compared to the 2012 base year. Details on our greenhouse gas emission reduction plan are in the Energy and Climate Change section of this report.

Risk Culture

PTTEP embeds a strong risk culture in our business operations as well as in the behaviors of all our executives and employees. Our Risk Management Committee (RMC) convenes every quarter to review the risk management direction of the company. We also communicate and raise risk management awareness among employees through internal GRC email communications. In addition, we also conducted Risk Management and Business Continuity Management Awareness Workshop in 2017 to promote risk culture and awareness on business continuity management. This workshop was attended by employees involved with our operating projects, namely Bongkot Project, Arthit Project, Sinphuhorm Project, S1 Project, and Petroleum Development Support Base Projects in Songkhla and Ranong provinces. We also plan to conduct more workshops for employees from other projects in the future.

Human Rights Risk in Petroleum Exploration and Production

PTTEP's Human Rights Policy aligns with the Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, related laws and regulations in Thailand, international laws and other international guidelines. To prevent complicity in human rights violation, our policy is applied to our operations throughout the supply chain, covering all stakeholders including vulnerable groups such as children and youth, indigenous people, migrant labor, senior citizens, and people with disabilities.

PTTEP developed the Human Rights Management System Guidelines, which exemplifies human rights best practices in line with our human rights policy. It is targeted towards four groups, i.e. employees, communities, suppliers, and security. PTTEP also conducts human rights risk assessments since 2014 to manage human rights risks in accordance to international best practices. The assessment uses the Human Rights Risk Register as a repository for all identified human rights risks related to company operations throughout the project lifecycle, namely through new project development to project decommissioning. The assessment covers all projects we operate and is regularly reviewed. In addition

to the conventional Enterprise Risk Management framework, this human rights risk assessment further ensures human right-related risks will also be thoroughly considered.

In 2017, the risk assessment results showed a medium-level human rights risk, namely the disproportionate use of force by armed security forces. Only two projects, or 6% of all 36 projects we operate, required armed security forces. To reduce this risk to an acceptable level, we have implemented the Security Management Standards and Working with Armed Security Forces Guidelines. We also used these guidelines as selection criteria for security contractors and training for all security officers, so that they understand PTTEP's service standards and expectation. In addition, we also assess suppliers and contractors' human rights risks.

For medium and high-level human rights risks, we have developed preventive and mitigation measures and have also provided remedies for those impacted. Departments responsible for following up on each risk impact are required to report its progress quarterly to the Sustainable Development Working Team and Sustainable Development Council. For low human rights risks, preventive and mitigation measures are carried out through regular management systems, such as the Issue and Stakeholder Management System, Environmental Impact Assessment (EIA), and Grievance Mechanism.

Internal Control, Internal Audit, and Compliance System

Recognizing the importance of internal control, internal audit, and compliance system, PTTEP has established an effective internal control and auditing system throughout the organization to ensure that the company will achieve its objectives of complying with relevant laws and regulations to gain the confidence of stakeholders. The company stipulates annual internal self-assessments. If any non-compliance case is reported, the case will be immediately rectified. The Internal Audit Division validates and assures that business operations are carried out according to the company's objectives and the audit results are directly reported to the Audit Committee.

Supply Chain Management

PTTEP recognizes the roles and responsibilities that suppliers play for the company to achieve sustainability. The company has an effective supply chain management system in line with our Supply Chain Management Policy and PTTEP Vendor Sustainable Code of Conduct. PTTEP conducts risk assessment at every step of our supply chain management and manages suppliers' environmental, social, and governance (ESG) risks. Our efforts aim at preventing and mitigating impacts on the company, society, and the environment as well as creating sustainable values for the company and suppliers.

Supplier Risk Management

Management of suppliers' risks not only helps ensure business continuity and achieve business objectives, but also supports capacity building of suppliers throughout our supply chain. This will help suppliers to respond to demands from our business growth while also enabling them to prevent and mitigate their environmental, social, and governance risks.

Supplier Risk Management

-
- 01

New Vendor Pre-Qualifications

The company conducts pre-qualification of new vendors on their business financial capability, environmental social and governance (ESG) impacts, human rights, labor rights, and anti-bribery practices.


 - 02

Spend Analysis and Supplier Classification Analysis through Supply Positioning Model (SPM)

This model is used to classify the work categories and suppliers based on their criticality to the company in terms of spending value, volume of products/services purchased, and non-substitutability.


 - 03

Supplier Sustainability Risk Assessment

The company conducts supplier sustainability risk assessment focusing especially on human rights, environmentally-friendly products and services (green procurement), and anti-corruption and bribery practices. Our risk assessment is conducted via various approaches, namely 1) Supplier self-assessment at the pre-qualification process; 2) Integration of sustainability criteria into Supply Positioning Model (SPM); and 3) High-risk suppliers on-site audit.


 - 04

Integration of ESG Factors in Supplier Selection and Contract Clauses

PTTEP provides guidelines for suppliers on sustainable practices covering all sustainability aspects including environmental, social, and governance (ESG) practices.


 - 05

Supplier Risk Mitigation Measures

For effective risk mitigation, PTTEP enforces risk management and mitigation measures to be included in our suppliers' contracts. PTTEP also sets KPIs for suppliers on risk management and collaborates with them to share best practices. The company also conducts supplier performance evaluations regularly.


-

In 2017, PTTEP enhanced the process of critical supplier identification to be inclusive of several qualities and also implemented the Supply Positioning Model (SPM) to effectively and efficiently manage tier 1 suppliers. The identification through SPM in 2017 showed 2 critical work categories which are

1) Wellhead platform and 2) Turbine compressor maintenance. These 2 work categories comprised of 8 suppliers in total.

In addition, the company also identified critical non-tier 1 suppliers through questionnaire and media analysis. PTTEP identified 19 critical non-tier 1 suppliers in 2017.



100%
of PTTEP's vendors were screened using business capability, environmental social, and governance (ESG) impacts, human rights, and labor rights criteria.



In 2017, PTTEP had **2,338** tier 1 suppliers from **76** work categories from **34** countries. These suppliers accounted for **775** million USD of total procurement spending.



In 2017, PTTEP had **14** critical suppliers, accounting for **1%** of all suppliers. Critical suppliers accounted for **355** million USD or **46%** of total procurement spending.

PTTEP also identified suppliers with high sustainability risks by using two criteria, namely environmental, social, and governance (ESG) risks and supply risk which covers location, supplier's experience and expertise in the products or services that they are providing, ability to deliver goods and services in a timely manner, and the market equilibrium of supply and demand. In 2017, PTTEP

identified 5 tier 1 suppliers and 11 critical non-tier 1 suppliers as high sustainability risk suppliers respectively.

Note Critical suppliers according to the SPM already includes ESG risks in the identification, therefore critical non-tier 1 suppliers classified as high sustainability risk suppliers because it was not in the SPM.

For the past 3 years, PTTEP has been conducting supplier risk assessment covering more than **981** tier 1 suppliers and **13** critical non-tier 1 suppliers. This was equal to **21%** and **28%** of all tier 1 suppliers and critical non-tier 1 suppliers respectively.

PTTEP conducted supplier risk assessment covering **24%** of tier 1 suppliers in 2017 and **25%** of critical non-tier 1 suppliers in 2017.

In 2017, PTTEP conducted on-site audits on **100%** of critical suppliers and **100%** of critical suppliers with high sustainability risks pass the audit.

In 2017, **100%** of audited sustainability high-risk suppliers have corrective action plans.

100% of sustainability high-risk suppliers audited in 2016 completed the corrective actions listed within the plan.

Supplier Sustainability Audit

To make our supply chain management more comprehensive, efficient and effective in terms of sustainability, PTTEP collaborated with companies within PTT Group to conduct supplier sustainability on-site audit by using these 5 criteria: 1) Management systems and policies; 2) Good governance and business ethics; 3) Social performance; 4) Occupational health and safety; and 5) Environmental performance. The audits were carried out by an independent external party.

In 2017, 2 suppliers from Onshore Civil Work and Mechanical Construction work categories, who were identified as having high ESG risks, participated in PTTEP's sustainability workshop. Suppliers were audited on their ESG performance and their results were at the "good" level. In addition to this, PTTEP plans to expand our on-site audit to all sustainability high-risk suppliers.

Development of Integrity Pact

With the aim to increase the integrity and transparency of our procurement practices, in 2017 PTTEP developed an Integrity Pact which is an agreement to assist each other in preventing all forms of corruption in public contracting. It is an agreement between government agencies, the private sector, and the general public. The integrity pact also allows designated parties to monitor all stages of the procurement process. The procurement process for purchasing offshore petroleum exploration and production fuel will be one of the leading projects to use the integrity pact. The procurement process for this project will begin in early 2018.

Collaboration with Suppliers and Vendors

PTTEP hosted various activities to promote collaboration among vendors, and suppliers. The company focused on local vendors and suppliers in forums such as Vendor Symposium and Supplier Day 2017. These events provided opportunities for the company to communicate its policies and requirements for suppliers and vendors including the following; vendor selection process and criteria, corporate governance and business ethics, safety security health and environment (SSHE) management system, and PTTEP's expectations of suppliers and vendors so that business could be conducted to comply with PTTEP Vendor Sustainable Code

of Conduct. In addition, PTTEP also collaborates with suppliers through meetings and workshops to develop new creative solutions for issues that arises from high risk work categories.

In 2017, our collaboration with suppliers through the Supply Chain Plus project, Marine Green Logistics project, and Fleet Optimization project reduced operating costs by more than **27.98** million USD.

PTTEP launched the Supply Chain Plus project in 2015 with the aim to reduce operating cost. In 2017, the company successfully reduced 27.28 million USD from efficiency improvement in the procurement process through 6 strategies as follows:

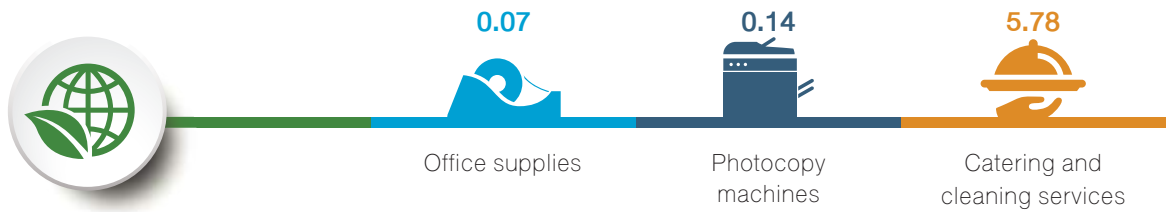
- 1) Purchasing and Contracting Strategy which include improvement of pricing structure, the search for vendors from low cost countries, local procurement, and accumulation of orders to increase bargaining power
- 2) Standardization Strategy for both products and services
- 3) Bundling/De-bundling Strategy is applied to purchase multiple products and services from single supplier or from various suppliers depending on the requirements
- 4) Strategy for Specification Optimization / Fit for Purpose to specify the quality and responsibilities of suppliers to fit the company's expectations
- 5) Negotiation Strategy for new and current contracts
- 6) Demand Management Strategy PTTEP reduced over 0.7 million USD from Marine Green Logistics and Fleet Optimization Projects

The company also collaborated with suppliers in activities to conserve marine ecosystem. PTTEP organized CSR activities to release sea turtles and build artificial coral reef under the Save Sea Life, Save Environment project at Royal Thai Navy's Sea Turtle Conservation Center and at Toey Ngam Beach, Royal Thai Marine Corps in Sattahip district, Chonburi Province. PTTEP also planned to organize Supplier Relations Day in 2018 for critical suppliers in order to communicate and promote PTTEP's anti-corruption and bribery practices in the supply chain.

In 2017, PTTEP developed the Green Procurement Criteria Manual for 6 product and service categories: 1) International Freight Forwarding Services; 2) Car Leasing/Purchasing; 3) Catering and House Keeping Services; 4) Office Supply Materials; 5) Cementing Service; and 6) Anchor Handling Tug SUPPLY (AHTS). Our Green Procurement Criteria Manual was certified and granted a Green Procurement Certificate by Thailand Environment Institute (TEI).

Green Procurement Project

(million USD)



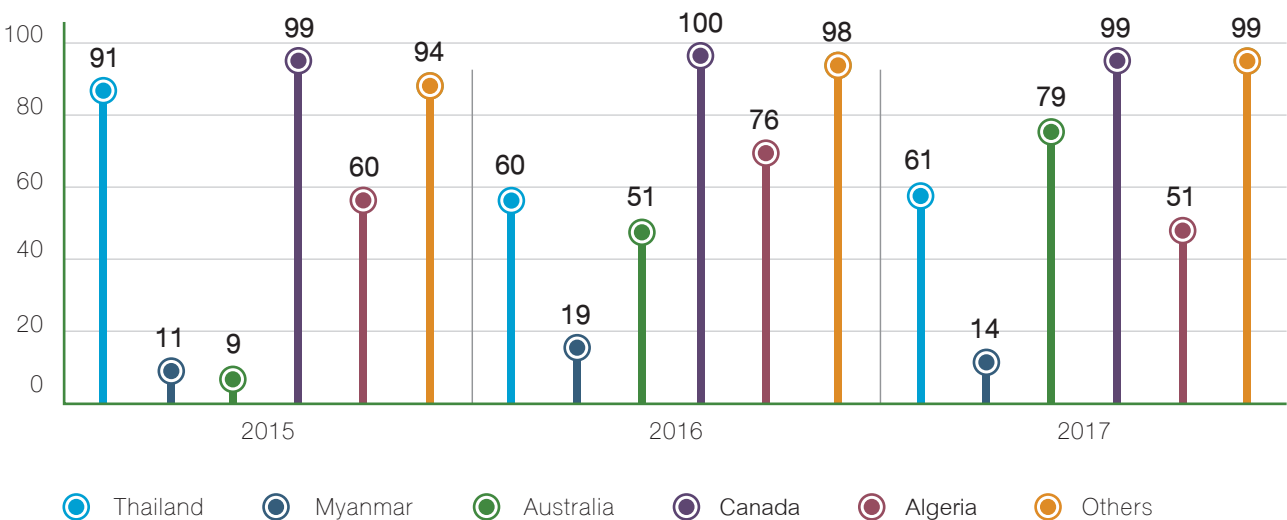
In 2017, PTTEP spent **5.99** million USD to purchase environmentally-friendly products and services through the Green Procurement project.









PTTEP contributes to the economy of every country the company operates in by supporting local procurement.

Purchase of products and services from local suppliers

(percent)



| | 2015 | 2016 | 2017 | 2017 Target |
|---|--------|--------|--------|-------------|
|  <p>Cost savings from Supply Chain Plus project (million USD)</p> | 22.8 | 47.16 | 38 | 33 |
|  <p>SSHE audits of suppliers from four high risk work categories including drilling, logistics, wellhead platform construction and other related work categories (Number of SSHE audits of suppliers)</p> | 38 | 65 | 40 | 40 |
|  <p>Vessel trips between Petroleum Development Support Base (Songkhla) and offshore operation in the Gulf of Thailand (Number of vessel trips per month)</p> | 37 | 34 | 27 | < 30 |
|  <p>Deck Space Utilization (Percent)</p> | 86 | 86 | 82 | > 85 |
|  <p>Carbon footprint reduction (tonnes of CO₂ equivalent)</p> | 46,108 | 49,788 | 51,974 | > 41,000 |
|  <p>Ratio of green office supplies (Percent)</p> | 83.6 | 52.2 | 50 | > 40 |

Ensuring Safe Operations



PTTEP is committed to safety as one of its business principles. Our aspiration is to achieve zero accident (Target Zero) by instilling a proactive safety culture and emphasizing process safety and personal safety of all employees and contractors. The company implements the Safety, Security, Health and Environment (SSHE) Management System that is in line with our policy and complies with international safety standards. PTTEP ensures that everyone who works with us returns home safely and actively prevents severe accidents or impacts on our stakeholders and the environment.

Every project that PTTEP operates is certified with the OHSAS 18001 accreditation. The company conducts a variety of activities and initiatives to manage safe operations and promotes a safety culture. This includes SSHE MS Efficiency and Effectiveness Program, with a focus on high impact issues such as the 4Ls Program (stemming from our Incident Risk Analysis process). The program was designed to clearly specify accident prevention measures and establish process safety standards, enabling our employees to work safely and systematically. PTTEP has expanded the program to cover our domestic offshore operations and Sinphuhorm Project and plans to expand the program to our international operations in 2018.

In 2017, PTTEP carried out various activities under the 4Ls Program to strengthen our safety management and improve accident prevention across the organization. The 4Ls Program activities in 2017 were as follows:



Land Transportation

- Reviewed and updated the Land Transport Safety Guideline
- Set a requirement to install the In-Vehicle Monitoring System (IVMS) in all vehicles owned by the company as well as our contractors to monitor safe driving behaviors
- Launched a communication campaign on ergonomics for drivers
- Updated the Journey Management Plan and communicated it to relevant parties for further implementation
- Conducted Defensive Driving Courses (DDC) for drivers at the head office and operational sites
- Launched Driving Behavior Observation Initiative at S1 Project by using infographics and other media to promote the use of the BEWAGON Checklist before starting a journey



Leakage

- Conducted methane leakage survey at the Zawtika Project to ensure post-maintenance process safety as well as identify methane emissions in order to develop control measures
- Updated the electronic Management of Change (e-MOC) tool and conducted compliance audits of e-MOC tool at operational sites
- Developed the Online Major Accident Event Prevention Tool



Lifting Operation

- Conducted employee and contractor capability checks on lifting operations
- Set up Lifting Committee at S1 Project to oversee the safety of lifting operations
- Created a registry of employees with Permit to Work on lifting operations, in compliance with laws and regulations, and conducted trainings for relevant employees
- Updated Lifting Operation Procedure and promoted best practices through Safe Lift Save Life and No Hand on Load communication campaigns
- Launched the DROPS campaign to prevent accidents from falling objects, including employee training, risk assessment of operational areas, and the creation of DROPS Inventory List (equipment that is prone to falling)
- Compiled lessons learned and communicated to all employees to prevent reoccurrence
- Set requirements for inspection and registration of lifting equipment for both the company and contractors



Leadership and Accountability

- Top executives participated in the SSHE Contractor Forum & Workshop
- Conducted training on SSHE Leadership for Frontline Supervisors
- Organized Safety Leadership Workshop together with suppliers and joint venture partners of the Bongkot Project
- Top executives participated in safety-related activities, such as safety walks and communication sessions on safety, and supported the allocation of financial and other resources for safety programs in order to achieve the zero accident target
- Developed Top Management Visit Handbook which acts as a guideline for PTTEP's management on safety-related activities



Process Safety

PTTEP implemented the SSHE Management System (SSHE MS) and Process Safety Management (PSM) in compliance with the requirements of the International Association of Oil and Gas Producers (IOGP), enabling the company to effectively manage and control major risks from the operations and to achieve our target of zero accidents.

In 2017, PTTEP carried out a variety of initiatives and activities to remind employees and contractors that safety is PTTEP's top priority. These included the development of e-Management of Change (e-MOC) to help improve process safety, allocation of time for knowledge sharing on process safety (Process Safety Moment), and regular safety training for employees and contractors.

PTTEP monitors process safety indicators through Major Accident Event Prevention Tool (MAE Prevention Tool) which is an electronic monitoring platform hosted on the PTTEP Intranet. Results are summarized in the Performance Statistic Dashboard (PSD) which includes indicators such as Lost Time Injury Frequency (LTIF), Total Recordable Injury Rate (TRIR), and Loss of Primary Containment (LOPC). The tool also has a built-in warning system if performance deviates from the company's target and can also forecast future performance. PTTEP also has an Action Tracking System (ATS) to track the progress of corrective actions identified during internal and external audits. This helps remind employees of the improvement needed to maintain safety risks at an acceptable level at all times. In the past, PTTEP always completed all corrective actions according to our plans which has resulted in a significant reduction in the number of TRIR cases.



In 2017, PTTEP conducted the LOPC Survey at our domestic and international operations. PTTEP also tracked and classified all process safety events into 4 tiers and voluntarily reported Tier 1

and Tier 2 process safety events to IOGP, in accordance with the American Petroleum Institute Recommended Practice (API RP).



In 2017, PTTEP achieved the target on process safety events.

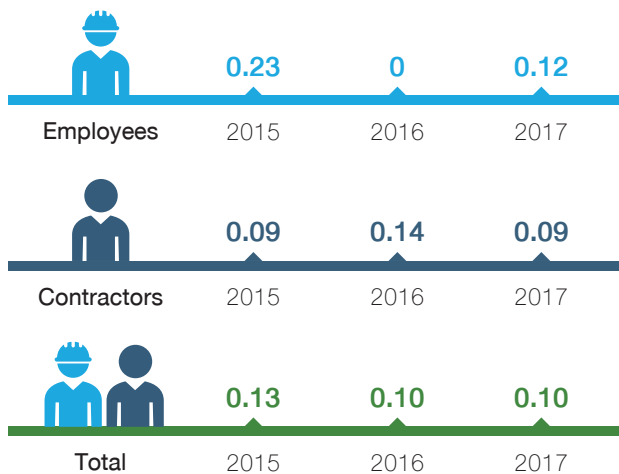
Personal Safety

As PTTEP is committed to creating an organizational culture that emphasizes a strong and driven SSHE culture for Target Zero, our focus is on engagement of employees and contractors through a variety of initiatives and activities, such as the Operational Technical

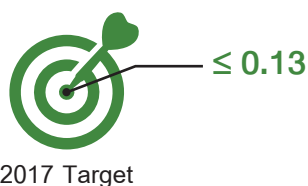
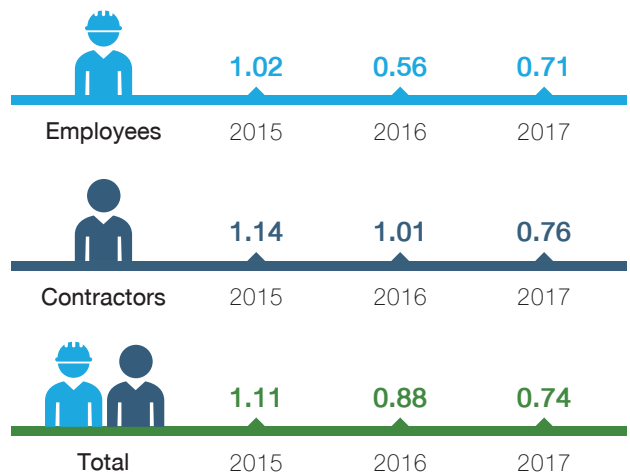
Review (OTR) and Safety Case Review. In 2017, the result of the SSHE Culture Survey was at 4.16 which was higher than the last survey results in 2014. This demonstrated the confidence of employees and contractors on our SSHE management.



Lost Time Injury Frequency (LTIF)
(Cases per million hours worked)



Total Recordable Incident Rate (TRIR)
(Cases per million hours worked)



In addition, there were no fatalities of employees and contractors in 2017 while our LTIF and TRIR performances have continued to improve. In 2017, the LTIF was at 0.10 which is lower than PTTEP's target and represented a continuous reduction since 2008.

Meanwhile, the TRIR was at 0.75, a continuous reduction since 2007. This continuous improvement has led us to become one of the top performing companies in the IOGP in terms of safety performance.

The Cultural Maturity Model

The result of 2017 SSHE Culture Survey was at 4.16 (Proactive level). PTTEP believes that an organizational culture that emphasizes the importance of SSHE management is the foundation for achieving the objective of "SSHE Culture Level 5".



Contractor Management on Safety, Security, Health and Environment

PTTEP ensures that contractors have an equal understanding of the SSHE culture which will enable them to contribute to the achievement of our zero-accident target. PTTEP provides the SSHE Contractor Management Handbook which serves as a guideline for contractors and related parties. Our SSHE promotion activities in 2017 included the Safety Leadership Workshop for suppliers and joint venture partners of the Bongkot Project which provided an opportunity for knowledge and experience sharing,

development of an additional channel for safety communication with contractors through the SSHE Contractor Network Website, Behavior-Based Safety (BBS) program for contractors at the supervisory level (BBS Train-the-Trainer program), High Risk Contractors Audit, SSHE Contractor Forum, and SSHE Contractor Workshop. These activities helped improve the understanding of safety standards and best practices.



“PTTEP helped boost confidence for our team. We now have **safety awareness in every step of our work and focus on prevention before things happen**. PTTEP promotes a safety culture and assigns “safety” as everyone’s responsibility. This resulted in no injuries at work for us. We are proud to be part of PTTEP.”

Mr. Ket Inliang

Deputy Managing Director of BRK Inter Transport Co.,Ltd.

“Every process, every communication, and PTTEP’s SSHE management **system are clear** which help build our confidence. We always get timely responses and are provided with good advice. This makes us feel at ease and happy every time we work with PTTEP.”

Ms. Arweephan Kongsadam

Engineer at Halliburton Energy Service Inc.



Occupational Health

PTTEP regularly monitors the Total Recordable Occupational Illness Rate (TROIR) of our employees with the aim of preventing occupational illnesses and tracking our performance on occupational health. In 2017, there were no occupational illness cases, a marked improvement from the previous year, achieving our target which was set at less than 0.20 cases per million hours worked.

In 2017, the company developed the E-Health Book, an electronic health database that allows employees to easily access their health records. Housed on the company's intranet, the E-Health

Book database contains data on the employees' annual medical checkups and health risks which also help the company plan health promotion activities and medical checkup programs that are appropriate for each employee. PTTEP also plans to conduct Health Risk Assessments (HRAs), in which the results will be used to further plan medical checkup programs. The results of the HRA, which is the assessment on workplace industrial hygiene and employees' medical expenses, will be added to the E-Health Book as a way to proactively monitor and manage employees' health. This is expected to be finalized in 2018. In addition, PTTEP also has risk-based health checkup criteria for our contractors, a practice based on our company standards that allows PTTEP to monitor the health of both our employees as well as contractors.



PTTEP was the first Thai organization that received the runner-up award for the “Duty of Care Awards 2017” in the category of Communications from the International SOS Foundation. PTTEP received this award due to our emphasis on communication with our employees on occupational health and travel health risks, along with the company's implementation of preventative measures to mitigate these risks.

Emergency and Crisis Management

PTTEP has developed and regularly reviewed the emergency and crisis management plan to prepare for events that could impact on the security of our operations and stakeholders. The company regularly conducts emergency preparedness exercises for both our domestic and international assets. In 2017, PTTEP conducted a mass casualty exercise at S1 Project in collaboration with local government agencies and relevant organizations including the National Institute for Emergency Medicine, Provincial Disaster

Prevention and Mitigation Unit, Provincial Health Office, and other local agencies. The exercise covered response plans for various types of emergencies including oil spills, earthquakes, and LPG leakages and explosions. This ensure that all units are fully prepared for effective emergency and crisis response. In addition, PTTEP also conducted emergency preparedness exercises at our international operations, such as at Algeria 433a & 416b Project, Algeria Hassi Bir Rekaiz Project, PTTEP Australasia Project, and Zawtika Project.

Mass Casualty Exercise at S1 Project



“From our collaboration with PTTEP, we see their commitment to [sic] providing safety for the public, communities, and local government agencies. PTTEP continuously commits to every aspect of safety. All employees have shown constant safety awareness and are ready to work safely.”

*Mr. Nopparat Kamseesung
Safety Policy and Planning Analyst,
Kamphaeng Phet Province*



Protecting the Environment



PTTEP is committed to operating our business conscientiously and responsibly towards society and the environment.

The company has implemented the Safety, Security, Health, and Environment Policy including the Green Practices Roadmap, and the Environmental Management System that are aligned with international standards.

Energy and Climate Change

PTTEP recognizes the severity of greenhouse gas (GHG) emissions that increase global temperatures and result in climate change, jeopardizing the livelihood of future generations. The company therefore supports the global agenda to reduce GHG emissions according to the Paris Agreement ratified at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change in Paris (COP21). The company is also determined to contribute to better energy efficiency

in line with the United Nations Sustainable Development Goals (SDGs), which ensures access to affordable, reliable, sustainable and modern energy for all. PTTEP has set short- and medium-term targets to reduce GHG emissions intensity by at least 20% and 25% by 2020 and 2030, respectively, compared to the base year of 2012. Through these targets, PTTEP aims to become a low-carbon organization and reduce impacts on society and the environment.

Doing our part to alleviate climate change and to achieve greater energy efficiency are two of PTTEP's top priorities. PTTEP has a proactive risk management process and carries out a variety of GHG emissions reduction and energy efficiency improvement projects as well as increasing the natural gas bias in our portfolio. The use of clean energy such as natural gas will help to reduce greenhouse gas emissions by approximately 0.45 tonnes of CO₂ equivalent per 1 megawatt-hour of electricity generated compared to coal.

In addition to the initiative to reduce GHG emissions in projects operated by PTTEP in Thailand, PTTEP has also expanded our reduction target in 2017 to the Petroleum Development Support Base Projects in Songkhla and Ranong provinces as well as international projects such as Zawtika and Montara Projects. The company also regularly reviews climate change risks for each project in order to monitor the climate change impacts and develop appropriate mitigation measures.

PTTEP collaborated with companies within the PTT Group to develop our internal carbon pricing scheme. This carbon price will be factored into investment decisions, especially in projects with potential to generate a significant amount of GHG, such as bidding for petroleum concessions and assessment of GHG emission reduction projects. As a guideline, the company uses the price of 200 baht per tonne of CO₂ equivalent, as recommended by the Thailand Greenhouse Gas Management Organization (Public Organization), or a price in line with the relevant laws and regulations of the country of operation.

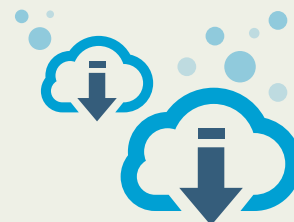
In addition, PTTEP also conducted a pilot study on GHG emission reduction by using excess gas that would otherwise be flared to produce electricity and compressed natural gas (CNG) at the S1 Project. The company expects these projects could reduce GHG emissions annually by 12,000 and 4,000 tonnes of CO₂ equivalent, respectively. The actual implementation of the project is expected to commence in 2018.



PTTEP is ranked at the Leadership Level in the CDP Climate Change Program for its achievement in climate change risk management and greenhouse gas emissions reduction for the fourth consecutive year.



PTTEP has reduced greenhouse gas emissions by more than **1,000,000** tonnes of CO₂ equivalent since 2013



In 2017 PTTEP reduced greenhouse gas emissions intensity by **2.6%** as compared to the base year in 2012.

In 2017 PTTEP conducted greenhouse gas emission reduction projects as follows:

● **GBS Flash Gas Recovery Project**

This project reduced greenhouse gas emissions by 170,000 tonnes of CO₂ equivalent per year. It enabled us to recover the excess gas from the condensate production process, (which would otherwise be flared), back into the production process and increase the production efficiency as well.

● **Logistics Fleet Management Project**

This project focused on improving the monitoring and management of PTTEP’s vessel fleet and increasing the efficiency of vessel fuel usage. PTTEP utilized the Real-time Vessel Tracking System and collaborated with contractors on the Vessel Fuel Efficiency Program which has been implemented for every vessel. In 2017, PTTEP succeeded in reducing vessel fuel usage by 0.9 million liters. This translates to a GHG emission reduction of 51,000 tonnes of CO₂ equivalent.

● **S1 Flare Gas Utilization Project**

This project enabled PTTEP to reduce GHG emissions by 40,000 tonnes of CO₂ equivalent annually by selling associated gas that would otherwise be flared from the Sao Thian Production Station at the S1 Project to UAC Energy Co.,Ltd. for electricity generation.

● **S1 Trunk Flow Line Project**

This project reduced GHG emissions by 23,000 tonnes of CO₂ equivalents annually by transporting the associated gas from the remote production wells that would normally be flared to the main processing platform for further utilization.

● **S1 Heat Recovery Steam Generation Project**

This project reduced GHG emissions by 9,000 tonnes of CO₂ equivalent annually by recovering waste heat from the electricity generation process and reusing the heat in steam generation.

● **ART Seawater Pump Optimization Project**

This project enabled us to reduce GHG emissions by 5,900 tonnes of CO₂ equivalent annually by optimizing the use of seawater pumps. The company managed to switch from using two seawater pumps to just one pump without affecting the integrity of the cooling system.

● **S1 Methane Reduction Project**

This project helped reduce GHG emissions by 4,800 tonnes of CO₂ equivalent annually by sealing methane leakage around flanges and joints at the S1 Project.

● **PTTEP Reforestation Project**

PTTEP has supported the PTTEP Reforestation Project for 5 years. In 2017, the company was responsible for the maintenance of trees that were planted in 2013-2015, an area totaling 13,845 rai in 16 provinces. These trees help to absorb the carbon dioxide in the air and reduce GHG emissions by 43,750 tonnes of CO₂ equivalent annually.

● **Carbon Offset**

PTTEP bought 4.42 tonnes of CO₂ equivalent carbon credit from a carbon credit provider in Thailand to offset GHG emissions from the organization of Sustainable Development (SD) Day in 2017.

Amount of greenhouse gas reduced from production process

(tonnes of CO₂ equivalent)



Methane Leakage Survey Project

PTTEP conducted methane surveys in the operating areas at the S1, Zawtika and Montara Projects in accordance with the Methane Survey Guideline which is aligned with the Thailand Voluntary Emission Reduction Program developed by the Thailand Greenhouse Gas Management Organization (Public Organization). The project focused on surveying methane leakage and carrying out equipment maintenance used in petroleum production and transportation processes to increase their efficiency and reduce methane leakages. Methane is a more potent than carbon dioxide in terms of greenhouse gas. Therefore, PTTEP plans to continue methane surveys in operating areas and will expand the survey to the Greater Bongkot North and Zawtika projects in 2018.



Energy Efficiency

PTTEP is committed to managing the use of energy efficiently. The company has set a target to reduce energy intensity by at least 5% before 2020 as compared to the base year of 2012. In 2017,

the company conducted further studies to find effective measures to increase energy efficiency after conducting a study on energy use patterns at our projects in Myanmar. One such measure is the load adjustment for gas turbine compressors which is expected to be implemented in 2018.

Energy intensity

(gigajoule per tonne of production)



Environmental Performance

Operational Eco-efficiency

PTTEP is committed to operating the business in an environmentally responsible manner by focusing on efficient resource consumption and appropriate control and management of environmental impacts. The company ensures this commitment through our ISO 14001 - certified environmental management system. In 2017, all operations in Thailand and Australia were certified to the latest version, ISO14001:2015, by AJA Registrars under the United

Kingdom Accreditation Service (UKAS) certification. In addition, our Zawtika Project in Myanmar is currently in the process of certification and expected to be certified in 2018.

PTTEP's environmental management system is designed to address any environmental and social impacts that may arise from our operations. These include greenhouse gas management, water resources management, and waste management. The company remains committed to pursue opportunities to improve our environmental performance and mitigate any negative impacts.



PTTEP received the Best Environmental Responsibility award at the 7th Asian Excellence Award 2017 organized by Corporate Governance Asia magazine for the fourth consecutive year. This demonstrated the company's commitment to responsible environmental management.

Air Pollution

To minimize the impact of air pollutants on employees, contractors, communities and the environment, PTTEP strives to improve our production efficiency and reduce flaring wherever possible in

order to reduce the emission of air pollutants such as Nitrogen Oxide (NO_x), Sulfur Oxide (SO_x), and Volatile Organic Compounds (VOC). PTTEP continues to control air pollutant emissions within the industry accepted level suggested by the International Association of Oil and Gas Producers (IOGP).

Air Pollution Reduction from Production Process

(Tonne per thousand tonnes of production)



| | | | | | |
|----------------------|--------------|--------------|-------------------------|-------------|------------|
| NOx Intensity | | | NOx IOGP Average | | |
| 0.581 | 0.589 | 0.513 | 0.38 | 0.35 | NA* |
| 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| SOx Intensity | | | SOx IOGP Average | | |
| 0.031 | 0.033 | 0.024 | 0.20 | 0.18 | NA* |
| 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| VOC Intensity | | | VOC IOGP Average | | |
| 0.874 | 0.871 | 0.944 | 0.42 | 0.43 | NA* |
| 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |

*2017 IOGP Report on safety performance indicator not yet available

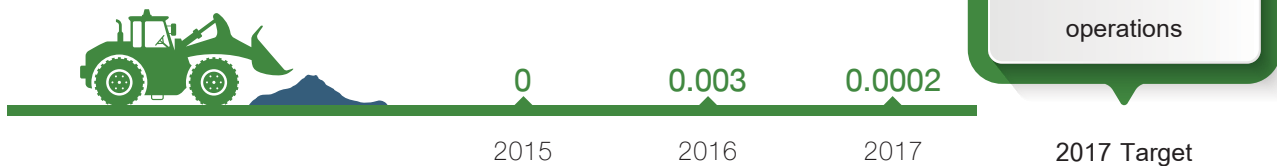
Waste Management

PTTEP has set a target to achieve zero hazardous waste to landfills. In 2017, the company began to divert non-hazardous waste in Sinphuhorm Project from landfill by using incineration for electricity generation as part of the Waste-to-Energy project of Khon Kaen Municipality. PTTEP also conducted a study on the treatment of end-of-life condensate off loading hoses from offshore operations by pyrolysis. The by-product of this process can be used as a source of fuel while reducing the amount of waste at the same time. In addition, PTTEP also developed an online waste management

system to monitor the waste transportation process throughout the lifecycle of the waste, from the operational site to the waste management contractor. The system collects information on the type of waste, amount, source, transportation route, transporter, collector or waste management contractor, and disposal method. PTTEP currently applies such waste management system to all offshore operations, including the Greater Bongkot North, Greater Bongkot South, and Arthit projects, as well as the onshore operation at the Sinphuhorm Project. In the future, PTTEP plans to expand the implementation of this system to the S1 and Suphanburi projects.

Zero Hazardous Waste to Landfill

(% of total hazardous waste)



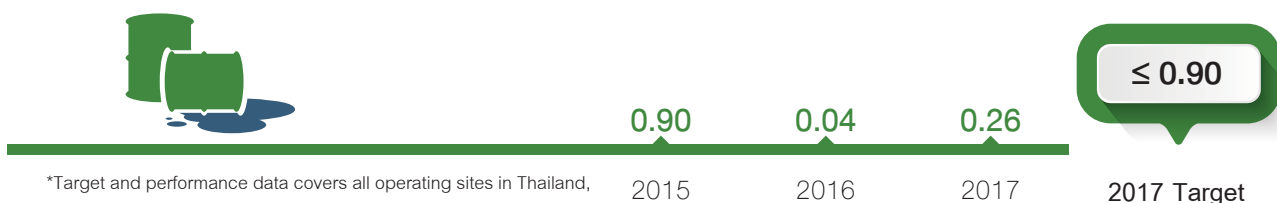
Spill Prevention

One of PTTEP's top priorities is to prevent oil and chemical spills which could cause adverse environmental and social impacts. PTTEP sets a target of zero spills and reviews the Spill Contingency Plan annually. The company regularly reviews specific spill response plan for every operation site to increase the effectiveness of the plan and to ensure compliance with the company's Emergency and Crisis Management Standards and other relevant international standards.

In 2017, PTTEP conducted a Capability Assessment for Oil Spills Response in Arthit and Suphanburi Projects to assess the effectiveness and readiness of the response plan in case of spills from production processes and equipment leaks. The assessment also helped us to improve the spill response process and enhance the integrity of production processes. In addition, the company also conducted a survey on loss of primary containment (LOPC survey) from production equipment. The company also implemented the oil and chemical spill management process through the 4Ls Project to achieve zero spill targets.

Oil and Chemical Spill*

(Tonne per million tonne of petroleum production)



*Target and performance data covers all operating sites in Thailand, Myanmar and Australia

A Study on Environmental Impacts in Indonesian Waters from the Montara Oil Spill in the Timor Sea, Australia

As of December 31, 2017, the outstanding legal disputes which PTTEP or one of the company's subsidiaries is a party involved as well as those which can significantly affect our operation or the subsidiary's, excluding disputes from the normal operation and circumstance, are as follows:

- PTTEP and PTTEP Australasia (Ashmore Cartier) Pty Ltd ("PTTEP AAA") were sued by the Ministry of Environment and Forestry of Indonesia at the Central Jakarta District Court of Indonesia for the environmental damages and environmental recovery costs.
- On May 3, 2017, the Ministry of Environment and Forestry of Indonesia filed a lawsuit against PTTEP and PTTEP AAA at the Central Jakarta District Court of Indonesia, claiming for the damages of mangrove forests, seagrass meadows, and coral reefs, and environmental recovery costs at the total amount of IDR 27,482,674,332,000 (approximately USD 2.1 billion) from 2009 Montara incident in Australia. As of December 31, 2017, the case was still under the court proceeding.
- PTTEP Australasia (Ashmore Cartier) Pty Ltd ("PTTEP AAA") was sued by a group of Indonesian seaweed farmers at the Federal Court of Australia for damages.
- On August 1, 2016, a group of Indonesian seaweed farmers filed a lawsuit against PTTEP AAA at the Federal Court of Australia, claiming for the damages caused by 2009 Montara incident in Australia. The lawsuit was filed after the lapsing of the period of prescription for claims. However, the Federal Court of Australia has granted an extension of the limitation period due to certain legal exceptions on November 15, 2017. As of December 31, 2017, the case was still under the court proceeding. This lawsuit did not state the amount of claim.
- PTTEP and PTTEP AAA continue to maintain the position, based on independent scientific researches overseen by the Australian Government, that no oil from Montara reached the shores of Australia or Indonesia, that no lasting impact on the highly sensitive and biodiverse ecosystems in Australian waters in the areas closest to Indonesian waters, and that there is no long-term damage to the environment in the Timor Sea.

**The studies are publically available through both the (Australian) Department of the Environment and PTTEP Australasia websites: <http://www.au.pttep.com/sustainable-development/environmental-monitoring/>

Water Resources Management

PTTEP's water resource management aims to minimize potential impacts on the environment and surrounding communities. The company conducts water risk assessments at every operational site under the company's control. The assessment considers all relevant risks such as water shortage, water price volatility, laws and regulations related to water usage and any potential water-related conflicts with stakeholders. The water risk assessment tool assesses current and future water risks by using both real data from operations and data from internationally recognized water forecast

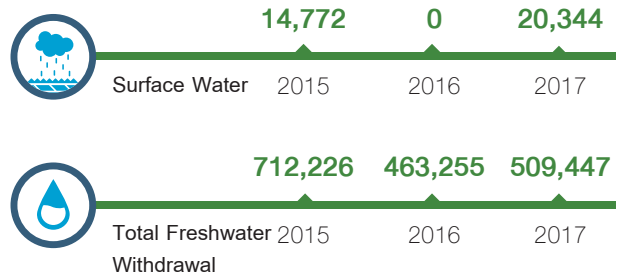
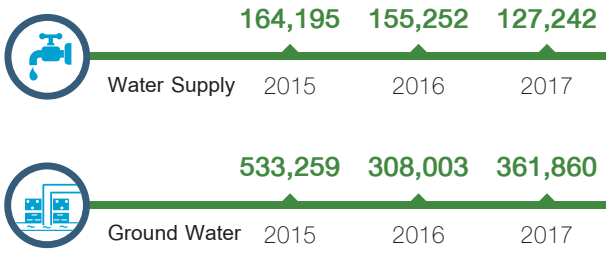
models including IPIECA Global Water Tool for Oil and Gas, WRI Aqueduct and WWF Water Risk Filter. The assessment results showed no significant water risk in any of our operations. In addition, PTTEP is committed to the implementation of the leakage inspection and maintenance program. The company also continued its water efficiency program at S1 Project by implementing water leakage detection and maintenance, and effective water consumption efficiency programs, just to name a few.



The year 2017 was the first time that PTTEP was recognized as a global leader for receiving the Water A List award from CDP Water Program. This achievement showed our outstanding practices on environmental risk management and water resource management.

Water Withdrawal

(cubic meter)

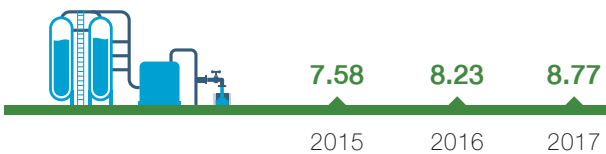


The majority of produced water from the production process is disposed by re-injection produced water into underground reservoirs. Even though the volume of produced water has risen as the result of increase in petroleum production volume

and the reservoirs' service years, the company strives to maximize the amount of produced water re-injection. In 2017, a total of 88% of produced water was re-injected. The remaining produced water was treated and disposed in compliance with applicable laws.

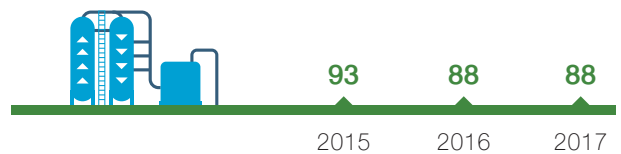
Total Produced Water Generated

(million cubic meters)



Produced Water Re-Injection Rate

(percent of produced water re-injected)



Biodiversity

PTTEP is committed to integrating biodiversity and ecosystem services management into every step of project development in order to reduce the risks of negative impacts on sensitive biodiversity. The company also focuses on creating net positive impact on the ecosystem and biodiversity as well as rehabilitating natural habitats.

The company's Biodiversity and Ecosystem Services Management Guideline are in line with IPIECA's Guide to Developing Biodiversity Action Plans (BAPs) for the Oil and Gas Sector. The guideline has been implemented in all operations.

In 2017, PTTEP was selected as the representative for oil and gas businesses in the Asia-Pacific region from IPIECA's Biodiversity and Ecosystem Services Working Group to attend a workshop on Mainstreaming Biodiversity into the Energy and Mining Sectors. The company participated in the discussion and shared good practices and our approach on biodiversity and ecosystem services management. The discussion points will be used as stakeholder opinions in the 2018 meeting for Convention on Biological Diversity (CBD) organized by the United Nations Environmental Program-World Conservation Monitoring Center (UNEP-WCMC).

The comprehensive biodiversity risk assessment on PTTEP's operational sites in 2017 showed that no operations were situated in areas with high biodiversity risks which require a BAP. However, PTTEP had voluntarily developed BAPs for operations in areas of medium biodiversity risks, namely Zawtika Project and Sinphuhorn Project, and provided training for employees in these operations. The company also launched several initiatives in 2017 as follows:

- Training on biodiversity and ecosystem services management for employees and contractors at our Zawtika Onshore Transportation Project. The project operates in the Tanintharyi National Reserve Forest of Myanmar. The training aimed to promote understanding and raise awareness on the importance of biodiversity and ecosystem services management, especially in sensitive biodiversity areas.
- Reporting on rare and endangered animals found in Zawtika Onshore Transportation Project as indicated in the BAP. This voluntary reporting demonstrated employees' commitment to biodiversity and ecosystem services management.
- Funding of biodiversity conservation projects to protect rare and endangered animals found in the Tanintharyi National Reserve Forest through the use of camera traps

Decommissioning

PTTEP recognizes the potential risks from decommissioning operations when concessions expire or are required to be decommissioned by law. It is our utmost duty and responsibility to comply with laws and regulations of every country that we operate in. The company conducts studies on various engineering techniques, the potential environmental impacts and stakeholders' opinions in order to develop the Best Practicable Environmental Option (BPEO) of decommissioning program that is technically and economically viable, safe, and has a minimal level of environmental impact.

In addition, PTTEP also uses the Net Environmental Benefit Analysis (NEBA) to assess decommissioning options. This analysis allows us to assess the net impacts on the environment and enables us to develop measures and select an engineering design that would help mitigate environmental impacts. Data from the analysis is used in the selection of the BPEO. The company regularly monitors compliance with relevant laws and regulations. Our primary decommissioning plan is submitted to the Department of Mineral Fuels to review the plan's thoroughness, including the decommissioning method, risk assessment and expenses as stipulated by law.

PTTEP's preparation for future decommissioning activity through a variety of initiatives, as follows:



- A study on Subsea Pipeline Decontamination at the pilot scale in collaboration with the National Science and Technology Development Agency (NSTDA). More details can be found in the "Technology and Innovation" section of this report.
- The development of Dismantling Yard Requirements in collaboration with the Petroleum Institute of Thailand (PTIT) and other offshore petroleum operators. The requirements were widely accepted by all relevant stakeholders as they incorporated suggestions and advice from government agencies including the Department of Mineral Fuels (DMF) and the Department of Industrial Works (DIW), as well as stakeholders interested to develop the dismantling yard.
- A study on transforming the discharged oil production platform into artificial reefs (Rig-to-Reef Project) in collaboration with the PTIT, offshore petroleum businesses, educational institutions, and relevant government agencies, including the DMF, the Department of Fisheries, the Department of Marine and Coastal Resources, the Marine Department, and the Royal Thai Navy. The study identified possible locations in the Gulf of Thailand to implement the project in the future.
- A study of sessile organisms residing on the jackets of the company's offshore platform in collaboration with the Bangsaen Institute of Marine Science and the Burapha University. The study classified sessile organisms captured in underwater videos and images taken during the marine monitoring survey, with a focus on protected species. In 2017, monitoring surveys were conducted at the Greater Bongkot North and Greater Bongkot South projects. The results of the study will be used for the selection and planning of appropriate decommissioning methods in the future.

Developing Our People



Human Capital Development

PTTEP believes that employees are the key foundation to the company's success. We are committed to recruiting and retaining competent employees and **treating all employees equally in accordance with human rights policy and labor rights**. Continuous competency development is a key component to prepare for new challenges to drive the company towards a robust and sustainable growth.



Average hours of employees attending trainings were **49** per year



A total of **1,665,030 USD** were used for employee development in 2017

PTTEP implements the Competency Management System (CMS) and Performance Development Appraisal System (PDA) throughout our operations, covering all employees in Thailand and overseas to evaluate and improve employee competency.

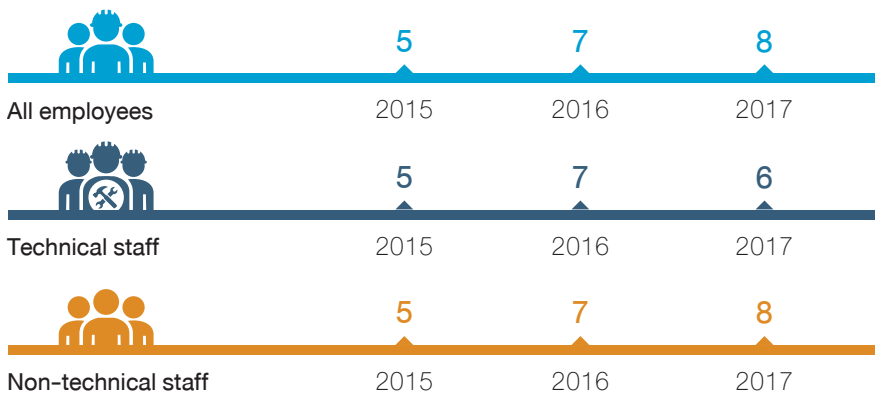
Our continuous improvement of our employee competency development system and process utilizes the Individual Competency Development Plan (ICDP) model based on the 70 / 20 / 10 approach which focuses on on-the-job training (70%),

coaching and mentoring (20%), and formal training (10%), respectively. PTTEP believes that employee development is most effective when combining hands-on experience with coaching and mentoring from more experienced employees including mentors, supervisors, and specialists as well as the attendance of formal training and self-study. The company encourages on-the-job training for employees so that they may engage in different types of business operations and projects within PTTEP and also our joint venture partners.

In 2017, a total of 1,430 employees updated their competency requirements designed to close specific competency gaps to improve employees' performance through the Individual Competency Development Plan (ICDP) which accounted for approximately 89% of employees. **It increased competencies by 8% for all employees and 6% for technical staff, higher than the expected target.**

Percentage of Increased Core Competencies

(Percent)



≥ 5% per year

2017 Target

In 2017, PTTEP provided 3 main training and development programs which would prepare employees for future business expansion. These programs include 1) Exploration Success Training Program, 2) Joint Venture Management Training Program, and 3) Mergers and Acquisitions Training Program. The company developed plans to accelerate employee competency through these three programs and also plans to attract external talents to fill the skill gap in the organization.

PTTEP organized the Supervisory Skills Development workshop, a continuation from 2016, to train employees in managerial and executive positions. The workshop emphasized 3 employee

development topics, namely self-understanding and empathy towards others, performance evaluation, and coaching and giving feedback. In addition, PTTEP also provided the HR-How-To training programs by using case studies for vice presidents and managers (or equivalent) on topics such as human capital management and how to deliver positive and constructive feedback. In 2017, a total of 128 managers and vice presidents, (total of five batches altogether), attended this program.

In addition to the development programs for managerial staff, PTTEP also developed a program to enhance leadership potential for future leaders through our EP-LEAD program. In 2017, the

company launched the EP-LEAD I (for its very first generation participants) program for High Potential Staff who do not have management experience. This program focuses on building good attitude, creating multi-disciplinary skills for team management, and enabling the ability to manage change. These focused topics would help prepare participants for supervisory and management positions in the future. The program combined classroom learning with workshop and hands-on activities. A total of 28 employees attended this program (first generation participants). The company planned to launch EP-LEAD II (second generation participants) for Managers, and EP-LEAD III (third generation participants) for Vice Presidents in 2018 to prepare them for higher positions according to the succession plan.

For executives, namely Chief Executive Officer, President, Executive Vice President, and Senior Vice President, PTTEP provided Executive Coaching Programs to help them build self-esteem and confidence in order to realize their full potential to become professional management which will enhance the company's public image.

For all other employees, PTTEP has training programs based on the 70 / 20 / 10 model. The company established a coaching and mentoring program for technical staff including geoscientists, engineers, and drilling engineers who drive the core exploration and production business. Experienced employees were assigned

as mentors to junior employees to expedite time to autonomy so that they can work independently in a shorter period of time. This program provided opportunities for knowledge sharing and discussion venues which also promotes and instills *EP SPIRIT* corporate values into employees that will drive the organization towards sustainability. PTTEP evaluated the effectiveness of the program through questionnaires and used the results of the evaluation to improve coaching techniques, monitoring process, and learning culture. In 2017, there were 144 mentors and 304 mentees.

PTTEP places high importance on continuous employee development and provides a variety of training and development programs for executives and employees at all levels. The company provides opportunities for employees and executives to attend external training and workshops provided by various institutions both in Thailand and overseas. These external training include technical topics, specific skill sets for specific positions, Safety, Security, Health and Environment (SSHE), and skills that are necessary for their positions. PTTEP developed a series of e-learning programs including Governance, Risk Management and Compliance (GRC) Online Training Program. In addition, the company also supports highly skilled employees to become trainers to conduct knowledge sharing on topics such as engineering and commercial and strategic planning to help with the development of other employees.

“Training provided by internal trainers helps strengthen communication skills of the trainers themselves. It promotes collaboration and the exchange of ideas as well as organizational knowledge management which will enable transfer of knowledge and successful practices from project to project.”

Mr. Rachit Cheerajin
Manager, Well Management System Section



In addition, PTTEP also provided scholarships for employees to further their higher education (graduate studies) in Thailand and overseas. Scholarships given are related to our business objectives, such as geoscience, petroleum engineering and other engineering disciplines. These scholarship employees will help the company to enhance its competitiveness. In 2017, a total of 13 employees were awarded scholarships to further their Master's degrees.

Talent Attraction and Retention

PTTEP aims to become one of the world's most attractive companies knowing that long-term success of the company depends on its ability to attract and retain high-potential employees. This is why PTTEP continues to improve the effectiveness of our recruitment process. PTTEP not only searches the employee pool in the labor market but also promotes our employees to fill positions from junior

to management level through an internal recruitment process. Existing employees can apply for a vacant position through our internal job posting system called the Career Choice. In 2017, there were a total of 68 positions posted on the Career Choice portal, of which 26 positions or 38% of the positions were filled internally.

In 2017, PTTEP also launched the Accelerated Development Program (ADP) to enhance competencies of our new graduates in technical fields including those in geoscience, geophysics, drilling engineering, well engineering, and other relevant engineering disciplines. The program focused on providing basic knowledge on exploration and production business, developing skills necessary for the business, and instilling our *EP SPIRIT* to drive our business towards success. A total of 15 employees benefited from the ADP in 2017. The majority of employees who participated in the program demonstrated high capabilities and abilities to adapt more quickly to the work environment.

"The ADP provided me with exposure to various operational aspects so that I could clearly understand how the company operates as a whole. I also learned the skills necessary to work with other teams and to tackle new responsibilities more quickly and efficiently. The program also outlined the analysis and planning skills. We adapted the knowledge and skills to work on assignments and projects. The Innovation Award that I received in 2017 was for the project that I worked on during the ADP."

Ms. Sineenat Kruenumjai
Engineer, Well Operations (Intervention)



PTTEP also recruited some undergraduate students who received PTTEP scholarship in relevant fields. In 2016, 6 students (40%) out of 15 scholarship students, were hired as full-time employees. In addition, the company also organized summer internship programs to attract high-potential students. In 2017, a total of 98 students participated in our internship program.

To build a robust foundation for our business in Myanmar which is one of our significant production bases, the company

implemented the Individual Development Plan (IDP) by selecting high-potential employees in Myanmar to join PTTEP's Headquarters in Thailand for three years. The program aimed at building knowledge and understanding on work process, organizational culture, and human resource management. This program helped employees to prepare for their responsibilities in management and other significant positions in place of Thai and foreign expatriates in Myanmar. In 2017, there were 7 employees from Myanmar participating in the program.

"A support for employees to be visionary and to be able to set their career path helps to appropriately enhance employee capabilities. The IDP helped me to develop my career. I have participated in many activities and learned through real implementation, training, and other activities which maximize my potential."

Ms. May Thet Wai

Accountant, Payment Payment Section



"This program helps me to have an awareness of, confidence in, and attentiveness to career growth which enable me to achieve short and long term goals including planning for my personal development. It also encouraged employees to achieve targets and played a significant role in employee development; therefore, it should be continued."

Mr. Lwin Maung Oo

Engineer, Project Onshore Modification and Construction Execution Section



PTTEP continuously focuses on improving employee quality of life and enhancing employee engagement to retain high-performing employees. PTTEP emphasizes the importance of communication and means to engage and harmonize employees in the organization. The company regularly collects employee feedback to improve our work process and benefits offerings in order to be able to compete with other leading companies in countries where PTTEP operates.

In 2017, PTTEP carried out various programs to increase employee engagement and instill our EP SPIRIT in everyday business operations. Supported by our management at all levels, PTTEP appointed EP SPIRIT Transformers to help promote our corporate values through a variety of communication channels and activities.

In 2017, there were 224 EP SPIRIT Transformers from 177 business functions. EP SPIRIT Transformers convene twice a year and regularly exchange ideas and best practices through an online channel (Line application). These regular communications allowed us to develop activities that address the need of employees, especially Generation Y employees which have been increasing and currently accounting for more than 50% of total employees.

Examples of activities to enhance employee engagement include activities to promote happiness at work and recreational activities, such as sport activities, entertainment, community development projects, employee volunteering programs, etc.



The survey on the needs of Generation Y employees by EP SPIRIT Transformers showed that Generation Y employees want to develop their soft side for effective teamwork. During 2016-2017, the company provided soft side training courses which helped to create positive work attitude and enhance emotional management skills. The training program was conducted by Ms. Rossukon Kongkate (Kru Ngor) - one of Thailand's famous inspirational coaches. More than 900 employees joined the program. This helped boost engagement among Generation Y employees from 38% in 2015 to 43% and 57% in 2016 and 2017 respectively.

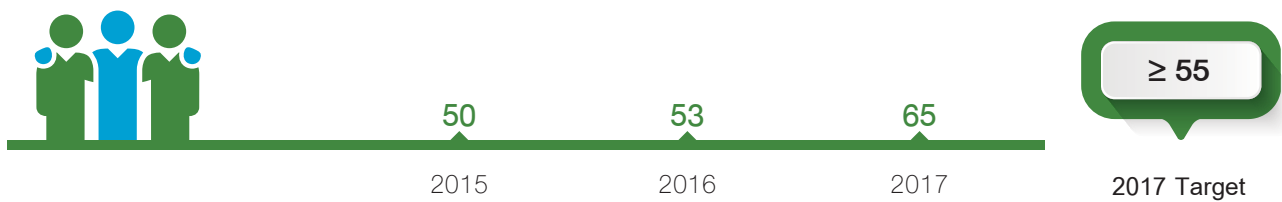
PTTEP also enhanced engagement of employees in other groups according to the employee engagement plan. Activities included communications by top executives to emphasize the importance of employees, participation in projects that helps to enhance EP SPIRIT, such as Employee Engagement Camp, EP SPIRIT

training for executives, Supervisory Skills Development training program for supervisors and the management, etc. The company carried out annual employee engagement surveys to help improve working conditions and enhance employee engagement.

In 2017, the result of our employee engagement was at **65%**, higher than the average score of Thai companies.

Employee Engagement

(percent)



Labor Rights

PTTEP adheres to the human rights policy based on the protocols of the United Nations Universal Declaration of Human Rights and other international guidelines. This policy covers all aspects of PTTEP’s operations and its stakeholders such as employees (from staff to top management), suppliers, contractors, PTTEP joint ventures, etc. PTTEP complies with local laws, fair labor practices, local culture and tradition, values, including the promotion of anti-corruption and bribery practices to show our commitment to the wellbeing of employees and all stakeholders.

Our respect to human rights and equal employment practices resulted in a balanced pool of employees in terms of gender both at the corporate and operational levels. In 2017, female employees accounted for 33.52% of total employees. This was the appropriate balance compared to other companies in the industry. Female employees also made up to 19.82% and 28.57% of junior and top management respectively. In terms of recruitment, 42.05% of new employees PTTEP hired were women.

PTTEP is also committed to improving employee quality of life by providing premium benefits to employees. The company focuses on benefits that help enhance security of employees and their family. These include health center, healthcare coverage, recreational areas, nursing rooms for breastfeeding mothers, paternal leave, etc. The company strictly complies with labor laws and regulations of the countries PTTEP operates in. PTTEP has a Welfare Committee which comprises of 22 employee representatives from our operations and 7 executives. The Committee, representing 93% of employees, provided an opportunity for the employer and employees to discuss issues on remuneration, welfare, and labor rights every month. In 2017, the Committee discussed over 66 issues covering remuneration, welfare, benefits, and career advancement opportunities. Examples of specific issues are healthcare coverage for employees’ spouses and children, increase of childbirth assistance benefit, etc.

Creating Value for Society



PTTEP is committed to establishing trust and acceptance from our stakeholders through business operating in accordance to the Community Relations and Management Policy and Corporate Social Responsibility Policy.


PTTEP organizes a range of activities and projects not only in response to stakeholders' expectations, but also as a reflection of our commitment to be a socially responsible company.

Social License to Operate

Maintaining the social license to operate is essential for PTTEP. The company is committed to managing impacts on the communities from our operations, whether related to safety, security, health or the environment. Strict implementation of environmental management standards and the company's Issue and Stakeholder Management System (ISMS) is supplemented with regular progress

monitoring, thorough communications and engagement with stakeholders in every project. PTTEP officers, including Community Relations officers, regularly communicate the details of various projects, activities, mitigation and prevention measures as well as routinely collect feedback and address any concerns that may arise from all stakeholders.

As a result of PTTEP's commitment to our stakeholders, there were no reports of conflicts between PTTEP and stakeholders in 2017. In addition, our practice resulted in good collaboration between PTTEP and local communities, enabling effective engagement and communication for community development.



100% community engagement and consultation for all **7** projects under the production phase

*PTTEP did not have projects under the exploration and development phase in 2017

In 2017, PTTEP expanded the application of the ISMS to cover all domestic and international projects operated by PTTEP to systematically assess the risks and impacts from our operations on the stakeholders. This enabled the company to develop and implement an effective community engagement strategy. Furthermore, the company expanded the scope of ISMS workshops from Communications officers to some officers from the Bongkot and Arthit projects, equipping them with the understanding and knowledge of stakeholder management that

could complement PTTEP's efforts in this area. Additionally, PTTEP shared the implementation results and case studies at the Communication and Public Affairs Quarterly Meeting (CPQM), attended by officers from projects under the production phase in 5 countries: Thailand, Myanmar, Indonesia, Australia and Canada. The objectives were to share and learn about community impacts caused by petroleum exploration and production in each area, and to identify preventative measures to avoid repeat incidents.



In 2017, with an awareness of the importance in maintaining good relationships with all groups of stakeholders and to prevent any conflicts that may occur, PTTEP provided aid and financial compensation to land owners who may be affected by the exploration process in Myanmar. Financial compensation is determined according to the calculation framework of the Land Use and Crop Compensation Committee. Governmental officers, such as those from Myanmar Oil and Gas Enterprise (MOGE), participated in the determination to ensure impartiality.

Notably, although the aforementioned case was about establishing suitable compensation for land use and temporary leases, considerations were also given to stakeholders' long-term expectations. **The consideration process was transparent and the results were satisfactory for all parties involved**, particularly the land owners who agreed to the compensation offered by the company. Despite the operations not having any damages or impacts as expected by the company thus far, it is imperative for the company to continue engagement and negotiation with all relevant parties.

In 2016, PTTEP started conducting the Stakeholder Commitment Survey. The goal is to raise primary stakeholder commitment to Commitment/Support level by 2020. The company continuously implements social projects to create value for society in addition to strengthening our relationship with the communities through strategic communication, providing knowledge and understanding of good exploration and production practice, as well as involvement of PTTEP employees in the company's community and social development initiatives.

PTTEP conducted the Stakeholder Commitment Survey in 3 projects: S1 Project, Songkhla Petroleum Development Support Base Project, and PTTEP1 Project. During the surveys, stakeholders were categorized into 2 levels which are 1) those impacted in the primary areas (0-3 km. distance from the production platform and 0-1 km. from well head platform), and 2) those impacted in the

secondary areas (3-10 km. distance from the production platform and 1-5 km. from well head platform). The survey results were used to inform PTTEP's CSR strategy in order to garner acceptance and support for the company's operations. In 2018, the company plans to conduct the Stakeholder Commitment Survey for the Sinphuhorm Project as well as projects in Myanmar and Indonesia.

In 2017, the scope of the Grievance Handling Guideline has been expanded to cover projects in Myanmar, with plans to further expand the scope to Indonesia, Australia and Canada in 2018. This will allow the company to systematically manage and maintain the confidentiality of all grievances. The company has prepared a wide variety of channels through which complainants can report their grievances, such as through the community relations officer, email, telephone, fax, letter or social media. In 2017, there were no complaints filed from the communities at any PTTEP operational sites.

Contribution to Society



Total contribution to communities and society: **11.59** million USD



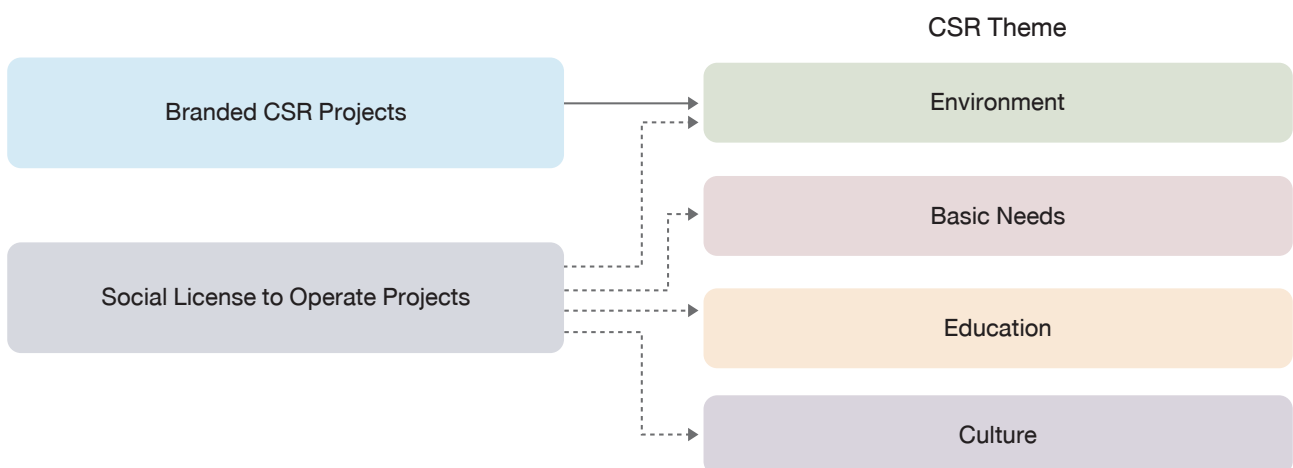
18,807 hours of employee volunteering*

*Furthermore, in 2017, there were over 3,679 employee volunteers spending over 11,037 hours of volunteer work creating sandalwood flowers for the Royal Cremation Ceremony of His Majesty King Bhumibol Adulyadej.

PTTEP implemented our social projects in accordance with the CSR 5-Year Roadmap (2016-2020), which is in alignment with the Corporate Social Responsibility Policy, to respond, reinforce and improve our primary stakeholders' quality of life in all projects operated by the company, both domestic and international. PTTEP has started analyzing the Social Return on Investment (SROI) of

various projects to measure our social impact. So far, SROI has been calculated for 12 projects. The SROI results will be used in future communications and social development strategy to clearly demonstrate PTTEP's social impact and improve our contribution to the communities.

CSR Strategy



Our social development projects are focused on 4 primary aspects: basic needs, environment, education and culture. PTTEP develops projects according to the company's CSR strategy which is to enhance PTTEP reputation through focusing on projects that create value for the society at large, so that PTTEP would be

remembered as 'An Explorer with Emphasis on Environmental Protection and Sustainable Social Development,' as well as to maintain the social license to operate by contributing to and building relationships with the local stakeholders surrounding our projects.

PTTEP Teenergy Project

PTTEP Teenergy is a project that improve the youths' capacity to safeguard our natural resources by providing them with the opportunity to learn, practice and take hands-on actions to protect natural resources. The project started in 2014 under the strategy of '3C: Cultivate-Create-Change' to cultivate consciousness of natural resource conservation and environmental responsibility among youths.

Cultivate in youths a consciousness for natural sources and the environment by creating learning opportunities outside the classroom

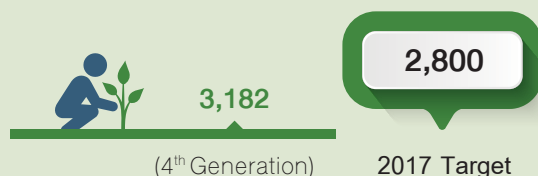
Create knowledge for youths, reinforcing the spirit of conservation and promote the youth network's readiness to take actions that will benefit society

Change the community and society for the better by brainstorming ideas and taking actions

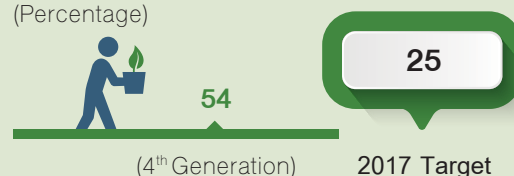


In 2017, the fourth iteration of the project, PTTEP expanded the project to cover all regions across Thailand and held camp activities in all 4 regions with PTTEP operations, including the North, Northeast, Central and South. The focus was to reinforce the spirit of conservation and to impart the wisdom of the Sufficiency Economy Philosophy to the youth. In addition, 40 scholarships with an estimated value of 400,000 baht were also given to youths in all regions to continue their journey of learning on natural resource conservation. The objective of the scholarships was to create a strong youth network in each region, ready to become a major driving force for social and environmental development.

Number of youths interested in participating in 2017 (4th Generation)
 (Persons per year)



Youths from 1st to 3rd Generations who continued to participate in activities for nature conservation
 (Percentage)



School-Based Integrated Rural Development Project

School-BIRD is a project to assist the development of small schools. PTTEP, in collaboration with Mechai Viravaidya Foundation, pioneered the project in 3 different schools in 3 provinces, which are Ban Pradoo Tao School in Sukhothai Province, Ban Bueng Tub-Rad School in Kamphaeng Petch Province, and Padoong Viddhaya School in Phitsanulok Province. The aim is to develop the schools as models of a learning hub and a center for economic and social development according to the integrated learning concept of Pracharath school and Mechai Pattana School. The focus of the project is on 6 key activities, which are 1) engagement in school activities and strengthening communities in the school vicinity; 2) training in agricultural business and establishment of school-based minifarms to eradicate poverty, in the form of the school's own social enterprise; 3) capacity building for teachers, students, parents and community members; 4) establishment of a social enterprise-based bank to encourage savings and provide career development loans to the community; 5) establishment of a business fund to support students' entrepreneurship and 6) support for health, hygiene, the environment and drinking water for students. PTTEP believes that the project provides fundamental knowledge to youths and increase opportunities for revenue generation for schools, students, parents and locals in the community, allowing them to attain a better quality of life and self-sufficiency.



Number of students who participated in the project



Number of schools that participated in the project



Number of villages that participated in the project



"Before, I was no different from other kids. I would wake up early to go to school and study. When school was over I would go home. With this project, my friends and I learned how to grow vegetables, take care of the plots, and help our teachers sell it in the community. It was both fun and educational. I am very proud that we are helping the school earn money."

Ms. Vinagan Phumphuang

Student, Padoong Viddhaya, Phitsanulok Province



Vocational Training Project in Myanmar

The project was initiated as a result of the survey of available skilled labor in Myanmar and a consultation with the Skill Training Center, an internal organization under the Ministry of Labor, Employment and Social Security. It was revealed that there were insufficient numbers of welders and air conditioning technicians. PTTEP therefore collaborated with Myanmar's Ministry of Labor, Employment and Social Security to initiate the project in 2015, with the aim to develop technicians for businesses and industries in Myanmar and abroad.

For phase 1 (2015-2017), the company renovated training buildings, procured equipment and organized training to upgrade the skill level of local artisans. There were 4 training sessions in 2015 and 8 in 2016, with 313 participants in total. Upon the training completion, as many as 275 participants were employed. The company also supported skills assessment by the National Skills Standards Authority (NSSA). So far, 50 participants have been assessed.



In 2017, the company expanded the scope of the training and provided support for electrical technicians. In total, 10 trainings were provided for all 3 technical skills with 299 participants. 100 participants took part in the skills assessment. Since the beginning of the project, the program has allowed over 600 technicians to be employed and over 150 technicians to be assessed by NSSA.

High Vocational Certificate Scholarship for Students in Myanmar

PTTEP recognizes the importance of skill and capacity development in Myanmar in order to support business growth. The company therefore collaborates with companies in the PTT Group to support the 4-year high vocational certificate scholarship program for students from Myanmar in the field of machinery (English program) at IRPC Technological College, Rayong Province, Thailand.

The criteria and student qualifications for the scholarship were jointly established by PTT Group and Myanmar's Ministry of Electricity and Energy. Since 2013, the company has granted over 120 scholarships in total. 37 students have graduated from the program, 13 of which are currently working in PTTEP's Myanmar production and technical operations. Another 80 students who received scholarships from 2014 to 2017 are currently pursuing their studies.



Awards and Recognitions



- ◉ Distinguished Award in the category of Financial Management Excellence

Thailand Management Association in cooperation with Sasin Graduate Institute of Business Administration of Chulalongkorn University



- ◉ Bronze Stevie Award in the Innovation in Community Relations Category for two corporate social responsibility projects, namely Stimulation, Intervention, Optimization of Services for Children (SIOLA) project in Indonesia and Crab Hatchery Learning Center project in Songkhla.

The Asia-Pacific Stevie Awards

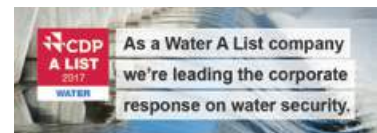
- ◉ Asia's Best CFO (Investor Relations) for the fourth consecutive year
The Corporate Governance Asia Magazine

- ◉ The Best Investor Relations Company (Thailand) for the fifth consecutive year
The Corporate Governance Asia Magazine

- ◉ The Outstanding Investor Relations Awards
The Stock Exchange of Thailand (SET)

- ◉ The 2017 Low Emission Support Scheme (LESS) Award Letter of Recognition
Thailand Greenhouse Gas Management Organization (TGO)

- ◉ A runner-up award in the communication category of the 2017 Global Duty of Care Awards
The International SOS Foundation



- ◉ CDP Water A List award in recognition of PTTEP's outstanding sustainable water management practice
CDP

- ◉ Asia's Best Environmental Responsibility for the fourth consecutive year
Corporate Governance Asia Magazine

MEMBER OF

Dow Jones Sustainability Indices

In Collaboration with RobecoSAM

- Member of 2017 Dow Jones Sustainability Indices (DJSI) in the World Oil and Gas Upstream & Integrated Industry for the fourth consecutive year
RobecoSAM



FTSE4Good

- Selected as a constituent of the FTSE4Good Index Series: the FTSE4Good Emerging Index for the second consecutive year

FTSE Russell



- Thailand Sustainability Investment Award 2017

The Stock Exchange of Thailand (SET)

- Recognized as a 2017 Top 100 Global Energy Leader
Thomson Reuters

- The Asset Best Initiative in Innovation Award
The Asset Magazine

- ISO 22301: 2012 Certification for Business Continuity Management System (BCMS) for the second consecutive year

British Standards Institution (BSI)

- Platinum Award in Best Community Program category in recognition of the SIOLA program in Indonesia
The 9th Annual Global CSR Summit and Awards and the Global Good Governance Awards 2017

- Gold Level of the Thailand Occupational Safety and Health Awards for the third consecutive year
Department of Labor Protection and Welfare, Ministry of Labor



- Best Category of the Sustainability Report Award 2017

Securities and Exchange Commission Thailand

- The Outstanding Innovative Company Awards
The Stock Exchange of Thailand (SET)



- Ranked leadership level for achievement in climate management for the fourth consecutive year

CDP

SD Performance Summary

| Economic | Unit | 2014 | 2015 | 2016 | 2017 |
|---|-------------|--------|--------|--------|--------|
| Direct Economic Value Generated | | | | | |
| Total revenue | Million USD | 7,834 | 5,614 | 4,339 | 4,523 |
| Economic Value Distributed | | | | | |
| Salary, wages and employees' benefits | Million USD | 171.12 | 139.19 | 138.61 | 178.62 |
| Operating expenses | Million USD | 857 | 685 | 582 | 652 |
| Payments to Providers of Capital | | | | | |
| Payment to governments ⁽²⁾ | Million USD | 2,183 | 1,398 | 950 | 826 |
| Dividend payments | Million USD | 736 | 298 | 310 | 459 |
| Interest payments | Million USD | 216 | 253 | 200 | 186 |

Remarks

- (1) Scope of reporting Economic performance is in alignment with 2017 PTTEP Annual Report.
(2) Payment to government covers petroleum royalties, remuneration for the petroleum and tax payments according to GRI G4-EC1.

| Environment | Unit | 2014 | 2015 | 2016 ⁽¹⁾⁽²⁾ | | 2017 ⁽³⁾ | |
|--|--|-------------|-------------|------------------------|---------------|---------------------|---------------|
| | | | | Thailand | International | Thailand | International |
| Hydrocarbon Production⁽⁴⁾ | | | | | | | |
| Production from operating asset | BOE | 124,091,873 | 136,408,299 | 102,888,543 | 25,116,412 | 98,043,001 | 22,343,237 |
| | Tonne | 16,929,815 | 19,015,762 | 15,112,236 | 3,339,866 | 14,936,612 | 2,855,571 |
| Energy Consumption | | | | | | | |
| Total direct energy consumption | GJ | 23,840,867 | 26,116,608 | 20,909,807 | 5,301,953 | 20,096,714 | 4,555,825 |
| Total indirect energy consumption by primary energy source (electricity purchased) | GJ | 73,469 | 81,510 | 106,908 | 6,828 | 141,785 | 18,280 |
| Total energy intensity | GJ/tonne production | 1.41 | 1.38 | 1.39 | 1.59 | 1.35 | 1.60 |
| Greenhouse Gas Emissions (GHGs)⁽⁵⁾⁽⁶⁾⁽⁷⁾ | | | | | | | |
| Direct total GHGs | Tonne CO ₂ equivalent | 5,122,074 | 4,885,952 | 4,048,528 | 582,963 | 4,083,327 | 561,541 |
| Indirect total GHGs | Tonne CO ₂ equivalent | 4,155 | 4,228 | 5,283 | 383 | 5,239 | 532 |
| Other relevant indirect GHG emission ⁽⁸⁾ | Tonne CO ₂ equivalent | 35,364 | 57,910 | 17,181 | 41,649 | 16,534 | 20,658 |
| GHG intensity | Tonne CO ₂ equivalent/thousand tonne production | 305 | 260 | 269 | 187 | 275 | 204 |
| Flare | | | | | | | |
| Total flaring | MMscf | 54,028 | 48,285 | 40,152 | 3,283 | 42,854 | 2,911 |
| Hydrocarbon flaring | Tonne | 1,265,170 | 1,096,671 | 982,161 | 77,194 | 1,043,084 | 68,809 |
| Hydrocarbon flaring intensity | Tonne/thousand BOE | 10.20 | 8.04 | 9.55 | 3.07 | 10.64 | 3.08 |
| Emissions | | | | | | | |
| Volatile organic compounds (VOCs) | Tonne VOC | 18,231 | 16,620 | 14,865 | 1,198 | 15,755 | 1,049 |
| VOC intensity | Tonne VOC/thousand tonne production | 1.077 | 0.874 | 0.984 | 0.359 | 1.055 | 0.367 |

| Environment | Unit | 2014 | 2015 | 2016 ⁽¹⁾⁽²⁾ | | 2017 ⁽³⁾ | |
|---|---|------------|------------|------------------------|--------------------|---------------------|---------------|
| | | | | Thailand | International | Thailand | International |
| Nitrogen oxides (NOx) | Tonne NO ₂ | 10,618 | 11,043 | 8,746 | 2,115 | 7,868 | 1,253 |
| NOx intensity | Tonne NO ₂ / thousand tonne production | 0.627 | 0.581 | 0.579 | 0.633 | 0.527 | 0.439 |
| Sulfur oxides (SOx) | Tonne SO ₂ | 715 | 598 | 460 | 150 | 374 | 44 |
| SOx intensity | Tonne SO ₂ / thousand tonne production | 0.042 | 0.031 | 0.030 | 0.045 | 0.025 | 0.015 |
| Ozone-depleting substances (Hydrochlorofluorocarbon - HCFC) ⁽⁹⁾ | Kg of CFC11 equivalent | 13.8 | 8.5 | 3.7 | NA ⁽¹⁷⁾ | 12.9 | NA |
| Spills⁽¹⁰⁾ | | | | | | | |
| Spills | Cases | 28 | 17 | 9 | 7 | 9 | 4 |
| | Tonne | 1.44 | 17.14 | 0.51 | 0.23 | 4.29 | 0.36 |
| Hydrocarbons | Cases | 25 | 15 | 9 | 7 | 8 | 3 |
| | Tonne | 1.42 | 16.59 | 0.51 | 0.23 | 4.29 | 0.36 |
| Non-hydrocarbons | Cases | 3 | 2 | 0 | 0 | 1 | 1 |
| | Tonne | 0.02 | 0.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| Water Withdrawal | | | | | | | |
| Total water withdrawal | Cubic meters | 51,033,650 | 51,295,665 | 50,420,020 | 362,098 | 47,921,070 | 350,924 |
| Water withdrawal (excluding once through cooling water) | Cubic meters | 2,622,604 | 2,630,453 | 1,994,573 | 362,098 | 2,492,540 | 350,924 |
| Once through cooling water | Cubic meters | 48,411,046 | 48,665,213 | 48,425,447 | 0 | 45,428,530 | 0 |
| Water Discharge | | | | | | | |
| Total water discharge | Cubic meters | 6,658,178 | 7,668,987 | 7,281,782 | 939,108 | 7,813,693 | 1,057,173 |
| Produced Water | Cubic meters | 6,658,178 | 7,668,987 | 7,281,782 | 939,108 | 7,760,171 | 1,057,173 |
| Injection | Cubic meters | 6,438,057 | 7,013,451 | 7,276,263 | 0 | 7,755,653 | 0 |
| Disposed by evaporation | Cubic meters | 128,599 | 279,930 | 4,823 | 103,679 | 2,601 | 0 |
| Treated & discharged ⁽¹¹⁾ | Cubic meters | 89,564 | 374,451 | 0 | 835,429 | 0 | 1,057,173 |
| Disposed by waste processor | Cubic meters | 1,958 | 1,155 | 696 | 0 | 1,917 | 0 |
| Process Wastewater ⁽¹²⁾ | Cubic meters | NA | NA | NA | NA | 53,522 | 0 |
| Injection | Cubic meters | NA | NA | NA | NA | 53,522 | 0 |
| Waste Generation⁽¹³⁾ | | | | | | | |
| Hazardous waste | Tonne | 36,468 | 42,566 | 28,243 | 499 | 38,477 | 451 |
| Non-hazardous waste | Tonne | 202,886 | 175,750 | 149,018 | 220 | 104,251 | 3,361 |
| Waste Disposal⁽¹⁴⁾⁽¹⁵⁾ | | | | | | | |
| Hazardous waste | Tonne | 36,706 | 42,366 | 27,668 | 541 | 39,517 | 555 |
| Drilling mud and cutting waste | Tonne | 34,702 | 40,286 | 25,348 | 0 | 36,571 | 0 |
| Other hazardous waste | Tonne | 2,004 | 2,080 | 2,320 | 541 | 2,946 | 555 |
| Non-hazardous waste | Tonne | 203,079 | 175,506 | 148,953 | 199 | 104,253 | 3,361 |
| Drilling mud and cutting waste | Tonne | 200,757 | 171,911 | 143,139 | 0 | 100,871 | 2,809 |
| Other non-hazardous waste | Tonne | 2,322 | 3,595 | 5,814 | 199 | 3,382 | 552 |

| Environment | Unit | 2014 | 2015 | 2016 ⁽¹⁾⁽²⁾ | | 2017 ⁽³⁾ | |
|--|-----------------|------|-------|------------------------|---------------|---------------------|---------------|
| | | | | Thailand | International | Thailand | International |
| Exported hazardous waste under the Basel Convention | Tonne | 205 | 0 | 0 | 0 | 1,169 | 0 |
| Environmental Management | | | | | | | |
| Investing in managing environmental impacts | Million USD | 6.09 | 12.77 | 39.56 | 0.98 | 38.016 | 1.36 |
| Treatment and disposal expenses | Million USD | 3.99 | 6.42 | 4.85 | 0.69 | 10.221 | 0.28 |
| Protection, management and investments | Million USD | 2.37 | 6.36 | 34.71 | 0.29 | 27.80 | 1.08 |
| Percentage of prevention cost in total environment expense | % | 37 | 50 | 88 | 30 | 73 | 79 |
| Legal Compliance | | | | | | | |
| Significant fines, penalties and settlements | Case | 0 | 0 | 0 | 0 | 0 | 0 |
| | Million USD | 0 | 0 | 0 | 0 | 0 | 0 |
| Biodiversity and Ecosystem Services | | | | | | | |
| Significant operating sites where biodiversity risks has been assessed | Number of sites | NA | NA | 8 | 3 | 8 | 2 |
| | % | NA | NA | 100 | 100 | 100 | 100 |
| Significant operating sites exposed to significant biodiversity risk | Number of sites | NA | NA | 0 | 0 | 0 | 0 |
| | % | NA | NA | 0 | 0 | 0 | 0 |

Remarks

- (1) PTTEP revised the category for environmental data to Thailand and International from 2016 onwards.^(G4-22)
- (2) International column includes Australia, Myanmar and Oman assets in 2016.^(G4-22)
- (3) In December 2016, PTTEP completed a sales agreement of its Oman asset. Therefore, international column includes Australia and Myanmar assets in 2017.^(G4-22)
- (4) In 2017, hydrocarbon production (tonne) was calculated by using site specific gas density instead of default gas density. Recalculation of hydrocarbon production (tonne) from 2014-2016 by using site specific gas density is equivalent to 18,078,003, 19,613,230 and 19,054,655 respectively.
- (5) Total direct GHG emission (Scope 1) based on equity basis is not included in this report.
- (6) GHG emission from well service venting is not included.
- (7) In 2017, methane (CH₄) emission is equivalent to 10,563 and 56,275 tonne CH₄ for Thailand and International assets respectively.
- (8) Other relevant indirect GHG emission (Scope 3) is comprised of transportation and air travel.
- (9) Ozone-depleting substances (ODS) include Hydrochlorofluorocarbon (HCFC) only.
- (10) 2013-2015 reported spills includes production phase of operating assets in Thailand and International assets.
- (11) In 2017, hydrocarbon discharged within produced water is equal to 0 and 29.85 tonne for Thailand and International assets respectively.
- (12) In 2017, injected process wastewater was reported to include in water discharge.
- (13) In 2017, hazardous and non-hazardous waste generation subtracted by reuse/recycling/recovery are 2,883 and 1,543 tonne.
- (14) In 2017 drilling mud & cutting waste is included for Thailand and International assets while 2014-2016 drilling mud & cutting waste is included only for Thailand.
- (15) The difference between waste generation and disposal amount is accounted for on-site storage.
- (16) NA (not available)
- (17) Ozone-depleting substance emission is revised for more accuracy from "0" to "NA" for International asset.^(G4-22)

| Health and Safety | Unit | 2014 | 2015 | 2016 ⁽¹⁾⁽²⁾ | | 2017 ⁽³⁾ | |
|----------------------------|-------|------|------|------------------------|---------------|---------------------|---------------|
| | | | | Thailand | International | Thailand | International |
| Fatalities | | | | | | | |
| Total number | Cases | 0 | 0 | 0 | 0 | 0 | 0 |
| Workforce ⁽⁴⁾ | Cases | 0 | 0 | 0 | 0 | 0 | 0 |
| Contractors ⁽⁵⁾ | Cases | 0 | 0 | 0 | 0 | 0 | 0 |

| Health and Safety | Unit | 2014 | 2015 | 2016 ⁽¹⁾⁽²⁾ | | 2017 ⁽³⁾ | |
|---|--|------------|------------|------------------------|---------------|---------------------|----------------------|
| | | | | Thailand | International | Thailand | International |
| Fatal accident rate (FAR) - Workforce | Cases per million hours worked | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fatal accident rate (FAR) - Contractors | Cases per million hours worked | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Occupational Health and Safety | | | | | | | |
| Total recordable incident rate (TRIR) - Workforce | Cases Cases per million hours worked | 6 0.63 | 9 1.02 | 1 0.13 | 4 2.76 | 5 0.69 | 1 0.77 |
| Total recordable incident rate (TRIR) - Contractors | Cases Cases per million hours worked | 46 1.50 | 25 1.14 | 16 1.00 | 5 1.04 | 4 0.24 | 12 2.54 |
| Lost time injury frequency (LTIF) - Workforce | Cases Cases per million hours worked | 0 0.00 | 2 0.23 | 0 0.00 | 0 0.00 | 1 0.14 | 0 0 |
| Lost time injury frequency (LTIF) - Contractors | Cases Cases per million hours worked | 9 0.29 | 2 0.09 | 2 0.13 | 1 0.21 | 0 0.00 | 2 0.42 |
| Near Miss - Workforce | Cases | 98 | 44 | 21 | 28 | 9 | 14 |
| Near Miss - Contractors | Cases | 53 | 34 | 14 | 7 | 16 | 15 |
| Illnesses | | | | | | | |
| Total recordable occupational illness frequency (TROIF) - Employees | Cases per million hours worked | 0.22 | 0.03 | 0.00 | 2.53 | 0.00 | 0.00 |
| Absentee rate - Workforce | % | 1.13 | 1.41 | 1.50 | 2.16 | 1.14 | 2.38 Only PTTEPAA |
| Absentee rate - Contractors | % | NA | NA | NA | NA | NA | NA |
| Restricted work case (RWC) - Workforce | Cases | 7 | 0 | 0 | 1 | 2 | 1 |
| Restricted work case (RWC) - Contractors | Cases | 0 | 0 | 0 | 0 | 2 | 2 |
| Medical treatment case - Workforce | Cases | 1 | 0 | 0 | 0 | 2 | 0 |
| Medical treatment case - Contractors | Cases | 4 | 1 | 0 | 0 | 2 | 8 |
| Process Safety | | | | | | | |
| Number of Tier 1 process safety events | Cases | 3 | 1 | 0 | 0 | 1 | 0 |
| Number of Tier 2 process safety events | Cases | 7 | 5 | 1 | 0 | 0 | 0 |
| Loss of primary containment (LOPC) | | | | | | | |
| Loss of primary containment (LOPC) | Number of incidents per million work hours of drilling and production | 0.48 | 0.21 | 0.06 | 0 | 0.06 | 0 |

Remarks

- (1) PTTEP revised the category for safety data to Thailand and International from 2016 onwards.^(G4-22)
- (2) International column includes Australia, Myanmar and Oman assets in 2016.^(G4-22)
- (3) In December 2016, PTTEP completed a sales agreement of its Oman asset. Therefore, international column includes Australia and Myanmar assets in 2017.^(G4-22)
- (4) Workforce means employees and supervised workers of PTTEP (PTTEP Services Limited).
- (5) Contractor means an individual or a company carrying out work under the supervision, instructions and SSHE Management System of PTTEP or subsidiaries within the reporting boundary.
- (6) NA (not available)

| Labor Practices | Unit | 2014 | | 2015 | | 2016 | | 2017 | |
|---|----------------------|-------|--------|-------|--------|-------|--------|-------|--------|
| | | Male | Female | Male | Female | Male | Female | Male | Female |
| Workforce | | | | | | | | | |
| Total Workforce ⁽¹⁾ | Persons | 4,547 | | 4,297 | | 3,794 | | 3,774 | |
| | Persons | 3,058 | 1,489 | 2,904 | 1,393 | 2,540 | 1,254 | 2,509 | 1,265 |
| Staff by region | | | | | | | | | |
| Thailand | Persons | 2,247 | 1,275 | 2,270 | 1,189 | 2,043 | 1,071 | 2,262 | 1,132 |
| Australia | Persons | 176 | 39 | 154 | 35 | 107 | 30 | 90 | 28 |
| Oman | Persons | 73 | 14 | 72 | 14 | 9 | 1 | - | - |
| Myanmar | Persons | 377 | 98 | 244 | 98 | 272 | 102 | 134 | 82 |
| Others | Persons | 185 | 63 | 164 | 57 | 109 | 50 | 23 | 23 |
| Staff by age | | | | | | | | | |
| < 30 years | Persons | 924 | 501 | 660 | 351 | 408 | 222 | 361 | 187 |
| 30-50 years | Persons | 1,671 | 893 | 1,826 | 955 | 1,760 | 941 | 1,793 | 976 |
| > 50 years | Persons | 463 | 95 | 418 | 87 | 372 | 91 | 355 | 102 |
| Staff by employment type | | | | | | | | | |
| Permanent ⁽²⁾ | Persons | 2,431 | 1,216 | 1,700 | 862 | 1,541 | 795 | 1,484 | 794 |
| Temporary ⁽³⁾ | Persons | 627 | 273 | 1,204 | 531 | 999 | 459 | 1,025 | 471 |
| Staff by employment category | | | | | | | | | |
| Executives | Persons | 34 | 8 | 33 | 8 | 26 | 8 | 30 | 12 |
| Middle Management | Persons | 77 | 25 | 77 | 29 | 83 | 23 | 89 | 22 |
| Senior | Persons | 618 | 222 | 619 | 237 | 912 | 276 | 835 | 292 |
| Employee | Persons | 2,329 | 1,234 | 2,175 | 1,119 | 1,519 | 947 | 1,555 | 939 |
| Training and Development | | | | | | | | | |
| Average training hours | Hours/person/year | 49 | 40 | 39 | 44 | 32 | 20 | 55 | 39 |
| Employee Satisfaction | | | | | | | | | |
| Employee satisfaction | % | 46 | | 50 | | 53 | | 65 | |
| Composition of Governance Bodies | | | | | | | | | |
| Board of directors | Persons | 14 | 0 | 15 | 0 | 14 | 1 | 14 | 1 |
| Executives | Persons | 34 | 8 | 33 | 8 | 26 | 8 | 30 | 12 |
| Middle management | Persons | 77 | 25 | 77 | 29 | 83 | 23 | 89 | 22 |
| Senior | Persons | 618 | 222 | 619 | 237 | 912 | 276 | 835 | 292 |
| Employee | Persons | 2,329 | 1,234 | 2,175 | 1,119 | 1,519 | 947 | 1,555 | 939 |
| New Employee Hire by Age Group | | | | | | | | | |
| < 30 years | Persons | 268 | 137 | 62 | 39 | 27 | 23 | 48 | 43 |
| 30-50 years | Persons | 201 | 65 | 85 | 25 | 41 | 15 | 51 | 35 |
| > 50 years | Persons | 54 | 7 | 11 | 1 | 11 | 1 | 14 | 4 |
| Total | Persons | 523 | 209 | 158 | 65 | 79 | 39 | 113 | 82 |
| New hire rate | % of total employees | 11.5 | 4.6 | 3.7 | 1.5 | 2.1 | 1.0 | 3.0 | 2.2 |

| Labor Practices | Unit | 2014 | | 2015 | | 2016 | | 2017 | |
|--|----------------------|-------|--------|-------|--------|-------|--------|-------|--------|
| | | Male | Female | Male | Female | Male | Female | Male | Female |
| Turnover by Age Group | | | | | | | | | |
| < 30 years | Persons | 66 | 77 | 46 | 43 | 29 | 29 | 18 | 28 |
| 30-50 years | Persons | 81 | 50 | 66 | 67 | 98 | 94 | 81 | 42 |
| > 50 years | Persons | 42 | 9 | 37 | 7 | 31 | 9 | 56 | 7 |
| Total | Persons | 189 | 136 | 149 | 117 | 158 | 132 | 155 | 77 |
| Turnover rate | % of total employees | 4.2 | 3.0 | 3.5 | 2.7 | 4.2 | 3.5 | 4.1 | 2.1 |
| Turnover by Type | | | | | | | | | |
| Voluntary resignation | Persons | 173 | 129 | 139 | 115 | 111 | 124 | 128 | 72 |
| Dismissal | Persons | 0 | 0 | 0 | 0 | 30 | 5 | 8 | 2 |
| Retirement | Persons | 11 | 6 | 7 | 1 | 16 | 3 | 17 | 2 |
| Death - not related to work | Persons | 5 | 1 | 3 | 1 | 1 | 0 | 2 | 1 |
| Parental Leave | | | | | | | | | |
| Employee taken parental leave | Persons | 17 | 15 | 61 | 46 | 35 | 39 | 37 | 45 |
| Employee returned to work after parental leave | % | 100 | 100 | 98.36 | 97.82 | 100 | 97.44 | 97.30 | 100 |
| Integrity | | | | | | | | | |
| Training hours concerning human rights, anti-bribery, and corruption | Hours | 1,694 | 1,568 | 675 | 891 | 502 | 339 | 1,199 | 846 |
| Gender Diversity and Equal Remuneration | | | | | | | | | |
| Ratio basic salary women/men | Ratio | 0.89 | | 0.66 | | 0.73 | | 0.78 | |
| Gender Diversity | | | | | | | | | |
| Women in workforce | Persons | 1,489 | | 1,393 | | 1,254 | | 1,265 | |
| | % | 33 | | 32 | | 33 | | 34 | |
| Women in professional positions | Persons | 1,234 | | 1,119 | | 947 | | 939 | |
| | % | 35 | | 34 | | 38 | | 38 | |
| Women in senior leadership positions | Persons | 222 | | 237 | | 276 | | 292 | |
| | % | 26 | | 28 | | 23 | | 26 | |
| Women in management positions | Persons | 33 | | 37 | | 31 | | 34 | |
| | % | 23 | | 25 | | 22 | | 26 | |

Remarks

- (1) Total workforce is the total number of employees involved in core activities of PTTEP's and subsidiaries'. This does not include workers and supervised workers performing non-core activities in the company e.g. maids, gardeners and drivers, etc.
- (2) Permanent means employment contracts with an indeterminate period made with PTTEP or its subsidiaries excluding PTTEP Services which is manpower agency of PTTEP.
- (3) Temporary means employment contract with or without a specific employment period made through manpower agencies e.g. PTTEP Services, etc.
- (4) PTTEP started reporting HR performance indicators at global scale in 2015.

| Corporate Social Responsibility | Unit | 2014 | 2015 | 2016 | 2017 |
|-----------------------------------|-------------|--------|-------|-------|--------|
| Economic Value Distributed | | | | | |
| Total contribution ⁽¹⁾ | Million USD | 44.50 | 26.46 | 11.23 | 11.59 |
| Volunteer | Hours | 10,308 | 6,438 | 4,806 | 18,807 |

Remarks

- (1) Total contribution has included corporate philanthropic spending and philanthropic spending at the project level since 2013.



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บริษัท เคพีเอ็มจี ภูมิไชย สอบบัญชี จำกัด
ชั้น 50-51 เอ็มไพร์ทาวเวอร์
1 ถนน สาทรใต้ แขวงยานนาวา
เขตสาทร กรุงเทพฯ 10120
โทร +66 2677 2000 แฟกซ์ +66 2677 2222

Independent limited assurance report

To the Directors of PTT Exploration and Production Public Company Limited (“PTTEP”)

Conclusion

Based on the procedures performed, as described below, nothing has come to our attention that causes us to believe that the selected subject matters (“Subject Matters”) identified below and included in the Sustainability Report 2017 (the “Report”) for the year ended 31 December 2017, are not, in all material respects, prepared in compliance with the reporting criteria (the “Criteria”).

Our Responsibilities

We have been engaged by PTTEP and are responsible for providing a limited assurance conclusion in respect of the Subject Matters for the year ended 31 December 2017 to be included in the Report as identified below.

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 we plan and perform the engagement to obtain limited assurance on whether the Subject Matters are prepared, in all material respects, in compliance with the Criteria. We have complied with the requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for 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.

Subject Matters

Subject Matters comprised of the following data expressed numerically for the year ended 31 December 2017:

- Energy consumption within organization (G4 – EN3)
- 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)
- Emissions of ozone-depleting substances (G4 – EN20)
- Nitrogen Oxide (NO_x), Sulphur Oxide (SO_x), and other significant air emissions (Methane, 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)
- Number and percentage of significant operating sites in which biodiversity risk has been assessed and monitored (G4 – OG4)
- Volume and disposal of formation or produced water (G4 – OG5)
- Amount of drilling waste (drill mud and cuttings) and strategies for treatment and disposal (G4 – OG7)
- The description given by PTTEP in the “About this report” section regarding adherence to the accountability principles set forth in the AA1000 APS standard on inclusivity, materiality and responsiveness in the process adopted to prepare the Report



Criteria

The Subject Matters were assessed according to the following criteria:

- The Sustainability Reporting Guidelines (G4) of the Global Reporting Initiative (“GRI G4”);
- The Oil and Gas Sector Disclosures (“OGSD”); and
- AA1000 AccountAbility Principles Standard (2008) (“AA1000 APS”).

Director’s and management’s responsibilities

The director and management of PTTEP are responsible for the preparation and presentation of the Subject Matters, specifically ensuring that in all material respects the Subject Matters are prepared and presented in accordance with the Criteria. 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 Subject Matters

In forming our limited assurance conclusion over the Subject Matters, 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 Subject Matters;
- Inquiries about managements practices and procedures related to identifying stakeholders and their expectations, determining material sustainability matters and implementing sustainability policies and guidelines;
- Visits to 2¹ sites, selected on the basis of risk analysis including the consideration of both quantitative and qualitative criteria;
- Agreeing the Subject Matters to relevant underlying sources on a sample basis to determine whether all the relevant information has been included in the Subject Matters and prepared in accordance with the Criteria.

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.

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 PTTEP, for any purpose or in any other context. Any party other than PTTEP 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 PTTEP for our work, for this independent limited assurance report, or for the conclusions we have reached.

KPMG Phoomchai Audit Ltd.

Bangkok

27 February 2018

¹ Greater Bongkot South project and Zawtika project

GRI, IR, UN SDGs and UNGC COP for the Advanced Level

Global Reporting Initiative (GRI) - G4 Content Index

General Standard Disclosures



| General Standard Disclosures | | Page Number | Omissions/ Remarks | External Assurance |
|--|-----------------------|-------------|--|--------------------|
| Strategy and Analysis | G4-1 | 8-9 | - | - |
| | G4-2 | 36-37 | - | - |
| Organizational Profile | G4-3 | 84 | https://www.pttep.com/en/Aboutpttep/Pttepgroup/Pttepheadquarters.aspx | - |
| | G4-4 | 26-27 | - | - |
| | G4-5 | 84 | https://www.pttep.com/en/Aboutpttep/Pttepgroup/Pttepheadquarters.aspx | - |
| | G4-6 | 26 | - | - |
| | G4-7 | 84 | https://www.pttep.com/en/InvestorRelations/ShareholderInformation/Top10Shareholders.aspx | - |
| | G4-8 | 26-27 | - | - |
| | G4-9 | 76, 78, 84 | https://www.pttep.com/en/InvestorRelations/FinancialPerformance/FinancialHighlight.aspx https://www.pttep.com/en/Investorrelations/Bondholderinformation/Debtprofile.aspx | - |
| | G4-10 | 84 | No significant variation in employment numbers and changes in 2017 | - |
| | G4-11 | 84 | All employees are covered by collective bargaining agreement. | - |
| | G4-12 | 39-43 | - | - |
| | G4-13 | 84 | No significant changes during the reporting year | - |
| | G4-14 | 52-61 | - | - |
| | G4-15 | 17, 38, 46 | - | - |
| | G4-16 | 9, 15 | - | - |
| Identified Material Aspects and Boundaries | G4-17 | 10 | - | - |
| | G4-18 | 12 | - | - |
| | G4-19 | 13 | - | - |
| | G4-20 | 13 | - | - |
| | G4-21 | 13 | - | - |
| | G4-22 | 78 | - | - |
| | G4-23 | 10 | No significant changes from previous reporting periods in the scopes and aspect boundaries | - |
| Stakeholder Engagement | G4-24 _{OGSS} | 10 | - | - |
| | G4-25 | 10 | - | - |
| | G4-26 | 10 | - | - |
| | G4-27 _{OGSS} | 12 | - | - |
| Report Profile | G4-28 | 10 | - | - |
| | G4-29 | 84 | Most recent previous report is 2016 PTTEP Sustainability Report. | - |
| | G4-30 | 84 | PTTEP publishes Sustainability Report annually. | - |
| | G4-31 | 90 | - | - |
| | G4-32 | 84-87 | - | - |

| General Standard Disclosures | Page Number | Omissions/ Remarks | External Assurance | |
|------------------------------|-------------|------------------------------|--|---|
| | G4-33 | 82-83 | PTTEP engaged KPMG to provide limited independent assurance service to PTTEP's 2017 Sustainability Report. PTTEP has process to ensure transparent external assurance. For more details of scope of the assurance, refer to assurance statement on page 82-83. | - |
| Governance | G4-34 | 85 | https://www.pttep.com/en/Aboutpttep/Publications/download.aspx?Content=1967 | - |
| | G4-35 | 85 | https://www.pttep.com/en/SustainableDevelopment/Sustainabilityatpttep/SDGovernanceStructure.aspx | - |
| | G4-36 | 85 | https://www.pttep.com/en/SustainableDevelopment/Sustainabilityatpttep/SDGovernanceStructure.aspx | - |
| | G4-37 | 10-12 | - | - |
| | G4-38 | 85 | https://www.pttep.com/en/Aboutpttep/Corporategovernance/Thecommittee.aspx | - |
| | G4-39 | 85 | https://www.pttep.com/en/Aboutpttep/Corporategovernance/Thecommittee.aspx | - |
| | G4-40 | 85 | 6.2 Selection of Directors and Chief Executive Officer, https://www.pttep.com/en/Aboutpttep/Corporategovernance/CgandbusinessEthics.aspx | - |
| | G4-41 | 85 | 6.3 Roles of the Board of Directors and Management, Conflict of Interest Prevention, https://www.pttep.com/en/Aboutpttep/Corporategovernance/CgandbusinessEthics.aspx | - |
| | G4-42 | 85 | https://www.pttep.com/en/SustainableDevelopment/Sustainabilityatpttep/SDGovernanceStructure.aspx | - |
| | G4-43 | 85 | Training of Directors and board skill matrix, https://www.pttep.com/en/Aboutpttep/Corporategovernance/Cgreport.aspx | - |
| | G4-44 | 85 | Refer to page 104-106 of Annual Report 2017 | - |
| | G4-45 | 36 | - | - |
| | G4-46 | 36 | - | - |
| | G4-47 | 36 | - | - |
| | G4-48 | 16 | - | - |
| | G4-49 | 85 | Refer to page 107-108 of Annual Report 2017 | - |
| | G4-50 | 85 | Refer to page 107-108 of Annual Report 2017 | - |
| | G4-51 | 85 | Refer to page 115-118 of Annual Report 2017 | - |
| | G4-52 | 85 | Refer to page 115-118 of Annual Report 2017 | - |
| | G4-53 | 85 | Refer to page 115 of Annual Report 2017 | - |
| G4-54 | 85 | Information is confidential. | - | |
| G4-55 | 85 | Information is confidential. | - | |
| Ethics and Integrity | G4-56 | 85 | https://www.pttep.com/en/SustainableDevelopment/Business/Cgandbusinessethics.aspx | - |
| | G4-57 | 85 | https://www.pttep.com/en/ContactUs.aspx | - |
| | G4-58 | 85 | https://whistleblower.pttep.com/en/MainInternetForm.aspx | - |

Specific Standard Disclosures

| Material Aspects | DMA and Indicators | Page Number | Omissions/ Remarks | External Assurance |
|---------------------------|-------------------------|-------------|---|--------------------|
| ECONOMICS | | | | |
| Economic Performance | G4-DMA | 24-25 | - | - |
| | G4-EC1 _{OGSS} | 76, 81 | - | - |
| | G4-EC2 _{OGSS} | 52-54 | - | - |
| | G4-EC3 | 76 | - | - |
| | G4-EC4 | 86 | PTTEP does not receive financial assistance from government. | - |
| Indirect Economic Impacts | G4-DMA _{OGSS} | 68-73 | - | - |
| | G4-EC7 _{OGSS} | 68-73 | - | - |
| | G4-EC8 _{OGSS} | 68-73 | - | - |
| Procurement Practices | G4-DMA _{OGSS} | 39-43 | - | - |
| | G4-EC9 | 42 | - | - |
| Reserves | G4-DMA _{OGSS} | 24-25 | - | - |
| | G4-OG1 | 19 | - | - |
| ENVIRONMENTAL | | | | |
| Energy | G4-DMA _{OGSS} | 52-55 | - | - |
| | G4-EN3 | 76 | - | ✓ |
| | G4-EN4 | 86 | PTTEP does not report energy consumption outside of the organization publicly at this time. | - |
| | G4-EN5 _{OGSS} | 55 | - | - |
| | G4-EN6 | 53 | - | - |
| | G4-EN7 | 86 | Not applicable to PTTEP business | - |
| | G4-OG2 | 86 | Not applicable to PTTEP business | - |
| | G4-OG3 | 86 | Not applicable to PTTEP business | - |
| Water | G4-DMA | 58-59 | - | - |
| | G4-EN8 _{OGSS} | 59 | - | ✓ |
| | G4-EN9 _{OGSS} | 58-59 | - | - |
| | G4-EN10 | This page | No recycled or reused water in 2017 | - |
| Emissions | G4-DMA | 52-56 | https://www.pttep.com/en/SustainableDevelopment/Environment/Biodiversity.aspx | - |
| | G4-EN15 _{OGSS} | 76 | - | ✓ |
| | G4-EN16 _{OGSS} | 76 | - | ✓ |
| | G4-EN17 _{OGSS} | 76 | - | ✓ |
| | G4-EN18 _{OGSS} | 76 | - | - |
| | G4-EN19 _{OGSS} | 52-55 | - | - |
| | G4-EN20 | 77 | - | ✓ |
| | G4-EN21 _{OGSS} | 76-77 | - | ✓ |
| Effluents and Waste | G4-DMA _{OGSS} | 57-59 | - | - |
| | G4-EN22 | 77 | - | ✓ |
| | G4-EN23 _{OGSS} | 77 | - | ✓ |
| | G4-EN24 _{OGSS} | 57, 77 | - | ✓ |
| | G4-EN25 | 78 | - | - |
| | G4-EN26 | 59-60 | - | - |
| | G4-OG5 | 59, 77 | - | ✓ |
| | G4-OG6 | 76 | - | - |
| | G4-OG7 | 77 | - | ✓ |

| Material Aspects | DMA and Indicators | Page Number | Omissions/ Remarks | External Assurance |
|--|------------------------|--------------|---|--------------------|
| Compliance | G4-DMA | 56-61 | - | - |
| | G4-EN29 | 78 | - | - |
| Supplier Environmental Assessment | G4-DMA | 39-41 | - | - |
| | G4-EN32 | 40 | - | - |
| | G4-EN33 | 87 | Information is currently unavailable. PTTEP will improve the data collection process. | - |
| LABOR PRACTICES AND DECENT WORK | | | | |
| Occupational Health and Safety | G4-DMA _{OGSS} | 44-51 | - | - |
| | G4-LA5 | 87 | https://www.pttep.com/en/Sustainabledevelopment/Business/Labourpractices.aspx | - |
| | G4-LA6 _{OGSS} | 78-80 | - | ✓ |
| | G4-LA7 | 44-51 | - | - |
| | G4-LA8 | 87 | https://www.pttep.com/en/Sustainabledevelopment/Business/Labourpractices.aspx | - |
| Training and Education | G4-DMA | 62-65 | - | - |
| | G4-LA9 | 62 | - | - |
| | G4-LA10 | 87 | https://www.pttep.com/en/SustainableDevelopment/Business/Labourpractices.aspx | - |
| | G4-LA11 | 87 | 100% of employees received regular performance and career development reviews. | - |
| Supplier Assessment for Labor Practices | G4-DMA | 39-41 | - | - |
| | G4-LA14 | 40-41 | - | - |
| | G4-LA15 | 87 | Information is currently unavailable. PTTEP will improve the data collection process. | - |
| HUMAN RIGHTS | | | | |
| Non-discrimination | G4-DMA | 33 | - | - |
| | G4-HR3 | 35 | - | - |
| Supplier Human Rights Assessment | G4-DMA _{OGSS} | 39-41 | - | - |
| | G4-HR10 | 40-41 | - | - |
| | G4-HR11 | 87 | Information is currently unavailable. PTTEP will improve the data collection process. | - |
| SOCIETY | | | | |
| Local Communities | G4-DMA _{OGSS} | 68-73 | - | - |
| | G4-SO1 | 69 | - | - |
| | G4-SO2 _{OGSS} | 38, 60-61 | - | - |
| | G4-OG10 | 87 | No disputes with local communities and indigenous peoples | - |
| | G4-OG11 | 87 | No projects are in the process of being decommissioned. | - |
| Anti-Corruption | G4-DMA _{OGSS} | 32-35 | - | - |
| | G4-SO3 | 34-35, 39-41 | - | - |
| | G4-SO4 | 32-35 | - | - |
| | G4-SO5 | 35 | - | - |
| Compliance | G4-DMA | 32-39 | - | - |
| | G4-SO8 _{OGSS} | 87 | No cases of non-compliance with laws and regulations | - |
| Supplier Assessment for Impacts on Society | GG4-DMA | 39-41 | - | - |
| | G4-SO9 | 40-41 | - | - |
| | G4-SO10 | 87 | Information is currently unavailable. PTTEP will improve the data collection process. | - |
| Asset Integrity and Process Safety | G4-DMA _{OGSS} | 44-47 | - | - |
| | G4-OG13 | 79 | - | - |

Remarks : External Assurance is provided for PTTEP operations in Thailand and Australia

Integrated Reporting (IR)

| Capital | Description | Page |
|---------------------------------|---|----------------|
| Financial Capital | The pool of funds that is available to an organization for use in the production of goods or the provision of services obtained through financing such as debt, equity or grants or generated through operations or investments. | 42, 62, 70, 76 |
| Manufactured Capital | Manufactured physical objects that are available to an organization for use in the production of goods or the provision of services (e.g. buildings, production, equipment and infrastructure). | 24-27, 42 |
| Intellectual Capital | 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). | 28-31 |
| Human Capital | People's competencies, capabilities and experience, and their motivations to innovate. | 30-31, 62-65 |
| Social and Relationship Capital | The institutions and relationships established within and between each community, group of stakeholders and other networks and an 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). | 10-12, 68-73 |
| Natural Capital | All renewable and non-renewable environmental stocks that provide goods and services that support the current and future prosperity of an organization (e.g. air, water, land, minerals and forests biodiversity and eco-system health). | 76-78 |

United Nations Sustainable Development Goals (UN SDGs)

| Goal | Description | Page |
|------|---|------------|
| 3 | Ensure healthy lives and promote well-being for all at all ages | 17, 19, 21 |
| 4 | Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all | 17, 18, 21 |
| 6 | Ensure availability and sustainable management of water and sanitation for all | 21 |
| 7 | Ensure access to affordable, reliable, sustainable and modern energy for all | 17, 19 |
| 8 | Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | 17, 19, 22 |
| 9 | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | 20 |
| 11 | Make cities and human settlements inclusive, safe, resilient and sustainable | 21 |
| 12 | Ensure sustainable consumption and production patterns | 21, 22 |
| 13 | Take urgent action to combat climate change and its impacts | 20 |
| 14 | Conserve and sustainably use the oceans, seas and marine resources for sustainable development | 21 |
| 15 | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse | 21 |
| 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 | 17, 18 |

United Nations Global Compact Communication on Progress (UNGC COP) for the Advance Level

| Criterion | Description | Page |
|-----------|---|----------------------------|
| 1 | The COP describes mainstreaming into corporate functions and business units | 16-22 |
| 2 | The COP describes value chain implementation | 39-43 |
| 3 | The COP describes robust commitments, strategies or policies in the area of human rights | 32-33, 38-39, 67 |
| 4 | The COP describes effective management systems to integrate the human rights principles | 32-33, 38-39, 67 |
| 5 | The COP describes effective monitoring and evaluation mechanisms of human rights integration | 32-33, 38-39, 67 |
| 6 | The COP describes robust commitments, strategies or policies in the area of labor | 39, 44-51, 62-67 |
| 7 | The COP describes effective management systems to integrate the labor principles | 39, 44-51, 62-67 |
| 8 | The COP describes effective monitoring and evaluation mechanisms of labor principles integration | 39, 44-51, 62-67 |
| 9 | The COP describes robust commitments, strategies or policies in the area of environmental stewardship | 28-29, 52-61 |
| 10 | The COP describes effective management systems to integrate the environmental principles | 28-29, 52-61 |
| 11 | The COP describes effective monitoring and evaluation mechanisms for environmental stewardship | 28-29, 52-61 |
| 12 | The COP describes robust commitments, strategies or policies in the area of anti-corruption | 32-35 |
| 13 | The COP describes effective management systems to integrate the anti-corruption principle | 32-35 |
| 14 | The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption | 32-35 |
| 15 | The COP describes core business contributions to UN goals and issues | 17-22 |
| 16 | The COP describes strategic social investments and philanthropy | 68-73 |
| 17 | The COP describes advocacy and public policy engagement | 34, 38, 47, 52, 55, 59, 60 |
| 18 | The COP describes partnerships and collective action | 34, 38, 47, 52, 55, 59, 60 |
| 19 | The COP describes CEO commitment and leadership | 8-9 |
| 20 | The COP describes Board adoption and oversight | 32-36 |
| 21 | The COP describes stakeholder engagement | 10-12 |

Survey of Readers' Opinions

Your suggestions will be valuable inputs for the improvement of the future PTTEP Sustainability Report.

1. Does the report provide you with an understanding of PTTEP sustainability?

- Yes, fully
 Yes, partially
 Not at all

2. Please rate your suggestion of PTTEP Sustainability Report 2017.

- | | | | | |
|----------------------|----------------------------|------------------------------|---------------------------|------------------------------------|
| Completeness | <input type="radio"/> High | <input type="radio"/> Medium | <input type="radio"/> Low | <input type="radio"/> Dissatisfied |
| Topics | <input type="radio"/> High | <input type="radio"/> Medium | <input type="radio"/> Low | <input type="radio"/> Dissatisfied |
| Ease to understand | <input type="radio"/> High | <input type="radio"/> Medium | <input type="radio"/> Low | <input type="radio"/> Dissatisfied |
| Report design | <input type="radio"/> High | <input type="radio"/> Medium | <input type="radio"/> Low | <input type="radio"/> Dissatisfied |
| Overall satisfaction | <input type="radio"/> High | <input type="radio"/> Medium | <input type="radio"/> Low | <input type="radio"/> Dissatisfied |

3. Please choose top three of material issues with influence for PTTEP business operation.

- | | |
|---|---|
| <input type="radio"/> Governance, Risk Management, and Compliance (GRC) | <input type="radio"/> Spills |
| <input type="radio"/> Increasing Petroleum Reserve | <input type="radio"/> Climate Change |
| <input type="radio"/> Technology and Innovation | <input type="radio"/> Environmental Management |
| <input type="radio"/> Supply Chain Management | <input type="radio"/> Human Capital Development |
| <input type="radio"/> Occupational Health and Safety | <input type="radio"/> Social Development |

4. Please provide further comments and/or suggestions (if any).

.....

.....

.....

5. Which best describes you as a stakeholder?

- | | | |
|---|---|---|
| <input type="radio"/> Shareholder / Investor | <input type="radio"/> Government Agency | <input type="radio"/> Media |
| <input type="radio"/> Supplier | <input type="radio"/> Employee | <input type="radio"/> Research / Academic Institute |
| <input type="radio"/> Student | <input type="radio"/> NGO | <input type="radio"/> Communities surrounding areas PTTEP operation areas |
| <input type="radio"/> Others (please specify) | | |

PTTEP appreciates your valuable inputs.



2017 SUSTAINABILITY REPORT

บริการธุรกิจตอบรับ

ใบอนุญาตเลขที่ ปน (น) 3225 ปณศ. จตุจักร
ท่าอากาศยานในประเทศไม่ต้องผูกตราไปรษณียากร

กรุณาส่ง

บริษัท ปตท.สำรวจและผลิตปิโตรเลียม จำกัด (มหาชน)
ฝ่ายสื่อสารองค์กร
ศูนย์เอนเนอร์ยีคอมเพล็กซ์ อาคารเอ ชั้นที่ 6, 19-36
เลขที่ 555/1 ถนนวิภาวดีรังสิต แขวงจตุจักร
เขตจตุจักร กรุงเทพฯ 10900





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PTTEP

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