

PTTEP 35th Anniversary
Energy Partner of Choice



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Introduction

35 years ago, in 1985, PTT Exploration and Production Public Company Limited or PTTEP, was founded by the Royal Thai Government to be Thailand's petroleum exploration and production company with the mission to strengthen the nation's energy security which will lead to a sustainable future for all Thais.

From our first day and our first petroleum exploration and production project, today we have expanded to more than 40 projects in 15 countries across the globe. Starting from 33 employees, today our family has grown to over 4,500 people from many nations. From learning from other energy companies, today we are an operator in petroleum exploration and production both domestically and internationally, ready, able and willing to transfer this knowledge for the benefit of all.

Every milestone is paved from the belief...
Belief in the capabilities of our people...
Belief in the possibilities of the impossible...
Belief in the dedication...
And belief in the power of collaboration derived from our vision "Energy Partner of Choice", which will enable PTTEP to overcome current and future obstacles and challenges.

This book is the tale of the journey and growth of a Thai petroleum exploration and production company, PTTEP, which has garnered international recognition from its first day until now, and is ready for a future of further challenges.

Throughout the 35 years of operation, PTTEP believes in our mission and dedicates our efforts to ensure energy security. No matter how many years have flown by or circumstances have changed, what will remain constant is that we will continue our mission with determination and responsibility to the community, society and environment.



“Our achievements today rests upon three principal elements. The first is the foresight of our founders and the government of the time for a fully integrated petroleum industry in Thailand, from upstream to downstream. The second is the continuous stream of skilled employees. Third and most importantly has been an unshakeable belief that we can do it.

The world is no longer driven by competition, but rather by cooperation. PTTEP values partnerships and is determined to be an “Energy Partner of Choice” for all, working together to grow our collective future.”

Phongsthorn Thavisin

President and Chief Executive Officer
PTT Exploration and Production Public Company Limited





35-Year Journey of PTTEP



1985

- Establishment of PTTEP on June 20 as Thailand's first and foremost petroleum exploration and production company
- Joint-venture partner with Thai Shell Company on the S1 Exploration Block (Sirikit Oil Field)



1988

- Concessionaire of the Bongkot field, the largest natural gas field in the Gulf of Thailand



1989

- Fully operating as PTTEP with initial organizational structure with 33 employees

1990

- Joint-venture partner with Total, British Gas, and Statoil in the Bongkot field



1991

- First international joint-venture in Myanmar



1993

- Co-founded Carigali-PTTEPI Operating Company Sdn. Bhd. (CPOC) with Petronas Carigali to explore and develop the Malaysia-Thailand Joint Development Area (MTJDA)



1994

- Her Royal Highness Princess Maha Chakri Sirindhorn presided over the ceremony marking the start-up production of the Bongkot natural gas field.
- Operator of the first onshore project at the PTTEP1 Project
- Listed on The Stock Exchange of Thailand

1996

- Establishment of PTTEP International Limited (PTTEPI), Yangon Branch in Myanmar

1998

- His Majesty King Bhumibol Adulyadej The Great graciously bestowed the name "Navamindra Petroleum Area" to the areas of the Bongkot and Arthit fields.



- First investment in the Middle East as an exploration operator in Oman

2001



- PTTEP became the operator of the Bongkot field on July 1
- Exploration started at the Arthit Project

2002

2003

Operator and concessionaire of the S1 Project (Sirikit Oil Field), the largest onshore oil field in Thailand



2004

First investment in North Africa in Algeria



2008



Gas production start-up from the Arthit Project on March 21, the first offshore field that PTTEP operates in all phases

2009

Production start-up from the Malaysia-Thailand Joint Development Area (MTJDA)

2012

Expansion of investment in East Africa in Mozambique



2014

First gas delivery from the Zawtika field in Myanmar
Acquisition of Hess Corporation in Thailand and assumed operatorship of the Sinphuhorm Project
Listed as the Dow Jones Sustainability Indices (DJSI) member in the DJSI World Oil and Gas Upstream & Integrated Industry for the first time

2016

Industry Leader in the DJSI World Oil and Gas Upstream & Integrated Industry for the first time



2019

First investment in the United Arab Emirates (UAE)
Awarded Production Sharing Contract (PSC) for the Bongkot and Erawan fields
Acquisition of Murphy Oil Corporation assets in Malaysia
Establishment of AI and Robotics Ventures Company Limited (ARV)
Acquisition of Partex Holding B.V.
PTTEP's largest discovery of gas reserves at Lang Lebah field in Malaysia, the world's 7th largest discovery of the year

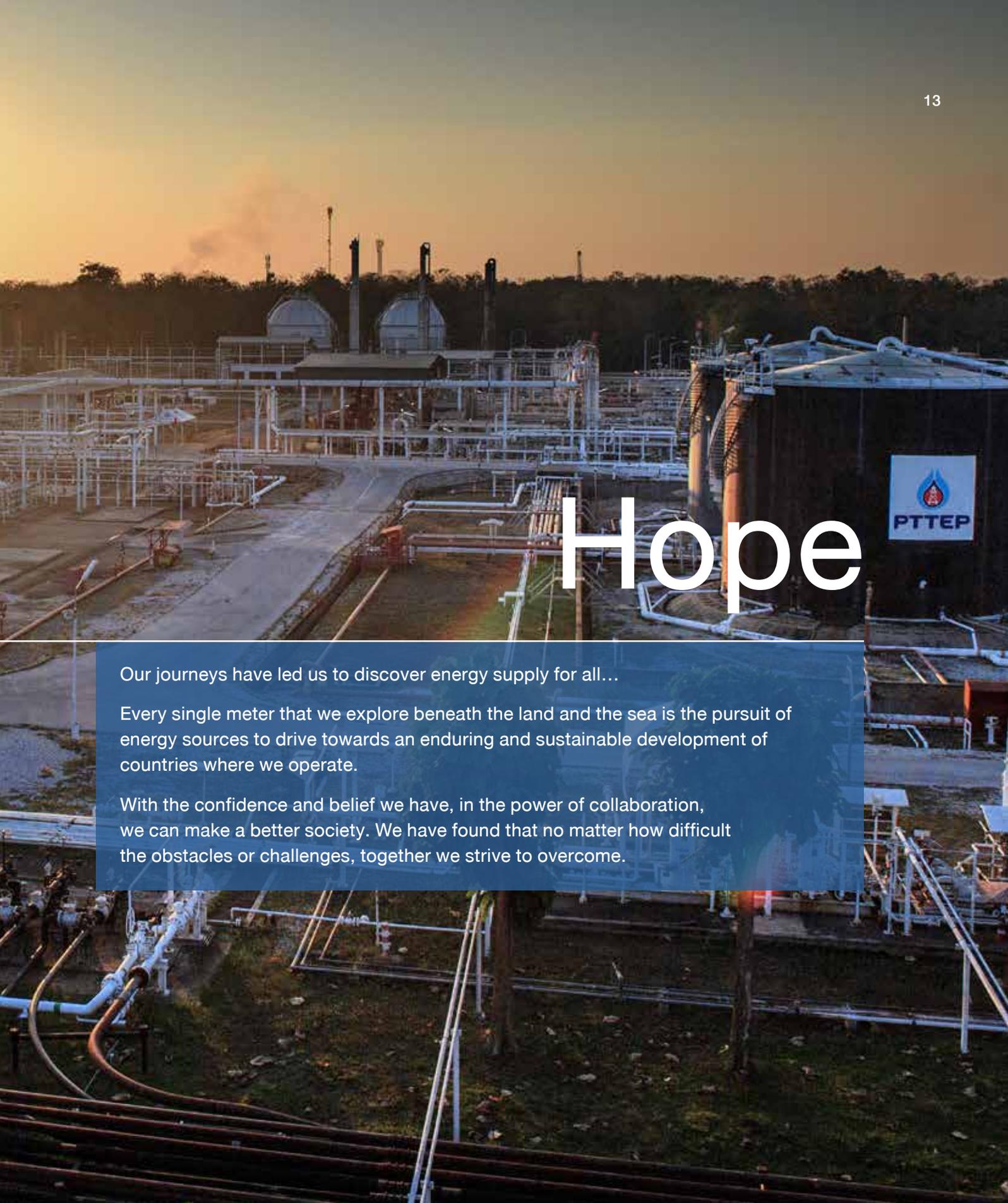


2020

Awarded petroleum exploration concession Block 12 in Oman
Deepwater oil discovery in Block 29, offshore Mexico

First



An industrial facility, likely an oil or gas processing plant, is shown at sunset. The sky is a mix of orange and blue. In the foreground, there are various pipes, valves, and structures. A large black storage tank on the right has a white logo with a blue flame and the letters 'PTTEP'. The word 'Hope' is written in large white letters across the middle of the image.

Hope

Our journeys have led us to discover energy supply for all...

Every single meter that we explore beneath the land and the sea is the pursuit of energy sources to drive towards an enduring and sustainable development of countries where we operate.

With the confidence and belief we have, in the power of collaboration, we can make a better society. We have found that no matter how difficult the obstacles or challenges, together we strive to overcome.

A Step of Hope

“Energy” has been one of the key factors in driving and developing the world economy for more than a century, including Thailand’s, and has become more important as the world develops.

Petroleum exploration in Thailand first took place more than a hundred years ago in 1918 when a small amount of crude oil oozed to the surface in Fang District, Chiang Mai Province. Lieutenant General Prince Kamphaengphet Akharayothin, commander of the Royal Railway Authority at the time, ordered the oil to be drilled and a small amount of oil was obtained. Since then, the exploration of Thai petroleum resources has started in earnest by government agencies.

However, it was not easy for a government agency to perform petroleum exploration and production operations because Thailand at that time still lacked the knowledge, personnel, technology, and a large investment budget needed to run operations continuously. The Thai government then offered opportunities to foreign petroleum companies, to invest in and operate petroleum businesses in Thailand. During 1961 - 1962, Union Oil of California (Unocal), Shell, and Esso, had sought the acquisition of petroleum exploration rights for both onshore and offshore fields in Thailand. As a result, the government approved the drafting of the Petroleum Law. In 1971, the government officially enacted the Petroleum Act B.E. 2514, 1971, and the Petroleum Income Tax Act B.E. 2514, 1971. Consequently, there was a great interest from oil companies from around the world in obtaining concessions to explore petroleum resources in Thailand.

This marked “the golden age” of petroleum exploration and production in Thailand.



One to Infinity

The government recognized the importance of the petroleum industry for the economic sustainability of the country; therefore, the government founded a state enterprise to operate an integrated petroleum business from upstream to downstream. The government legislated the Petroleum Authority of Thailand Act B.E. 2521, 1978, and founded the Petroleum Authority of Thailand or PTT on December 29, 1978, and appointed **Dr. Tongchat Hongladaromp** as the first governor of PTT. Later in November 1979, PTT established a petroleum exploration and production department responsible for studying and analyzing the low plain and basin geography of the country. Meanwhile, Thai Shell Exploration and Production Company Limited, an affiliate of Shell and a concessionaire of S1 exploration block (Sirikit Oil Field) located at Lan Krabue District, Kamphaeng Phet Province, found crude oil with the potential for commercialization and production commenced later in 1983 with a production capacity of 5,000 barrels per day.

Her Majesty Queen Sirikit The Queen Mother graciously named the crude oil field “Sirikit Oil Field” and presided over the opening ceremony of the field on January 12, 1983.



Sirikit Oil Field is the largest onshore oil field in Thailand, that led to the establishment of a petroleum exploration and production company of Thailand. This happened when the concessionaire submitted an official letter to the Department of Mineral Resources to request PTT as a co-concessionaire. However, the law regulated that only a private company could be a concessionaire. This became the reason for PTT to register an affiliated company called **PTT Exploration and Production Company Limited or PTTEP, on June 20, 1985, to undertake the key role for the government to explore, develop, and produce petroleum in Thailand.** This would help reduce the dependency on energy imports, while securing the energy sources for the country and increasing operational efficiency of the company by having PTT as a major shareholder.

The first chapter of PTTEP has begun.

PTTEP co-invested and operated Sirikit Oil Field or S1 as its first project with 25% share. It was initially operated by the staff from the petroleum exploration and production department of PTT.

At the beginning, the Ministry of Industry had invited the petroleum exploration and production department to visit an operation site and attend a presentation session by Thai Shell. This was an opportunity to collect data for planning and evaluation, which included investment costs, return on investment and its commercial potential. The department, then, presented its interest in investing to the PTT Board of Directors, by jointly invest through its subsidiary company PTTEP, which had its own management structure, rules and regulations to support such operation with flexibility and competitiveness.

Another challenge was that the petroleum exploration technology of that time was far less advanced than it is now. PTTEP, therefore, dedicated itself to developing solutions, exploration tools and methodologies with higher precision.

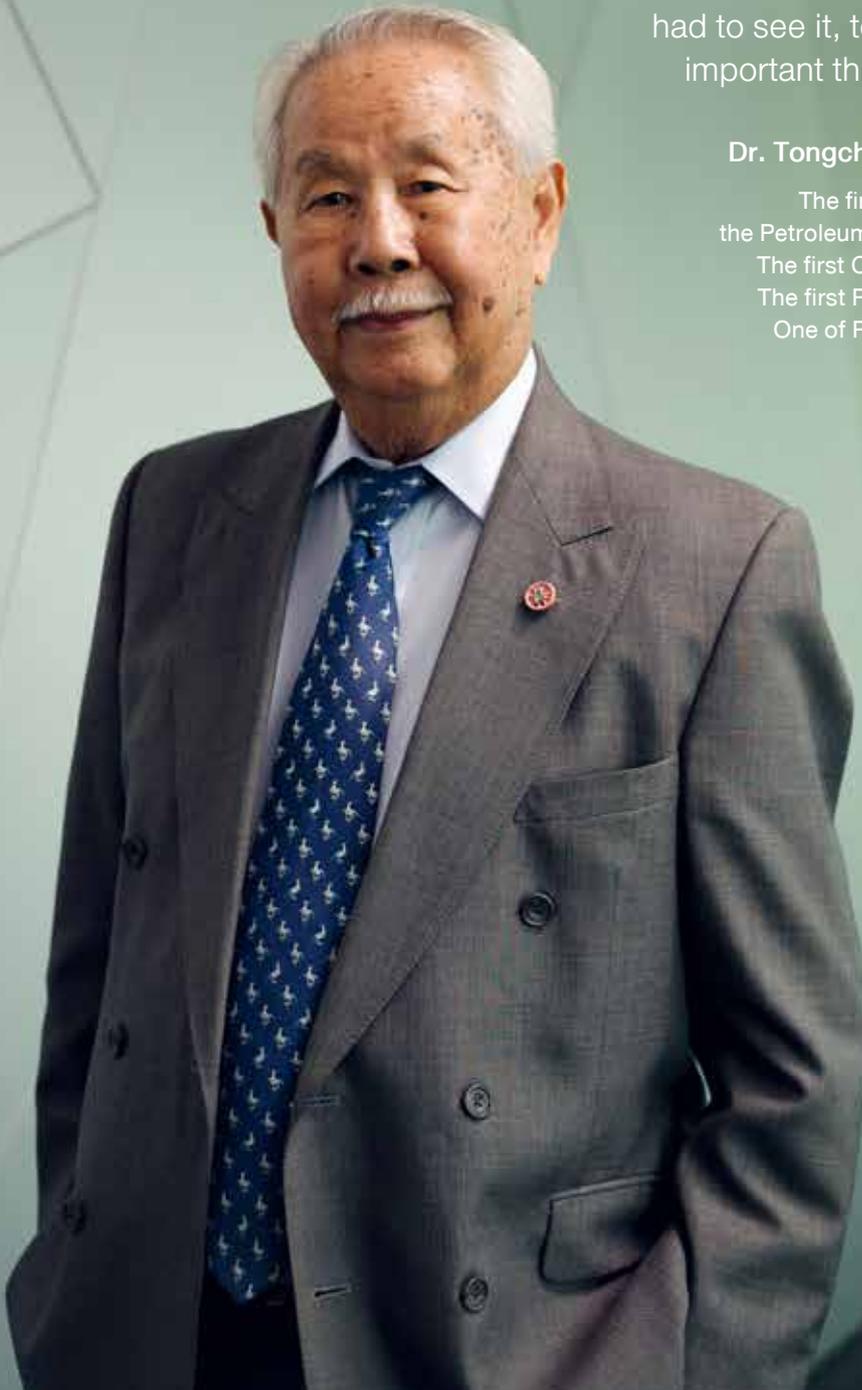




“To be a good business partner,
you have to believe in yourself,
believe in your co-workers,
know the nature of your business
and work with honesty.”

Preecha Supalak

Former President of PTTEP
One of PTTEP’s founders

A portrait of Dr. Tongchat Hongladaromp, an elderly man with white hair and a mustache, wearing a grey suit jacket, a light blue shirt, and a blue patterned tie. He is standing against a light green background with geometric lines. A small red and white pin is visible on his lapel.

“We learnt as much as we could about the petroleum industry, there was no mystery to it - we just had to see it, touch it, and the most important thing, experience it.”

Dr. Tongchat Hongladaromp

The first Governor of
the Petroleum Authority of Thailand
The first Chairman of PTTEP
The first President of PTTEP
One of PTTEP’s founders



Sirikit Oil Field is the major oil field of S1 Project located in Lan Krabue District, Kamphaeng Phet Province. In 1985, PTTEP invested as a joint venture partner with Thai Shell. Later in 2003, PTTEP became the operator and held the concessionary rights of the entire S1 field. Presently, S1 Project's production capacity of crude oil averages at 28,000 - 30,000 barrels per day, natural gas is at 29 - 30 million cubic foot per day, Liquefied Petroleum Gas (LPG) is at 180 - 190 tons per day*, approximately. The project is currently in the process of drilling exploration wells to evaluate further petroleum potential.

The joint venture with Thai Shell in the S1 Project was the first project for PTTEP to learn about onshore petroleum exploration and production by partnering with a world-class oil and gas company. During that time, PTTEP staff worked with dedication and diligence because they were all aware of the consequences of making a mistake, in a high-investment business with high risk. They processed information, assessed data, made plans, while being courageous and precise in decision making.

This is the most crucial start for a journey of a pioneer to explore, develop, and produce petroleum, with a heart full of hope to find energy resources to reduce the reliance on imported energy and to build sustainable energy security for the country in a long run.

* As of June 2020

Overcoming Challenges

Although petroleum exploration was a challenge for Thailand due to its complexity, risk, and high investment cost. However, through accumulated experiences and learning by doing, PTTEP committed to become a petroleum operator.

Onshore oil field, PTTEP 1 Project was the first step in becoming a petroleum operator when PTTEP acquired it from BP Exploration Operating (Thailand) in 1993. The project covers Kamphaengsaen Oil Field in Nakhon Pathom Province, U Thong, and Sang Kajai oil fields in Suphan Buri Province.

The 9.04 square kilometer area of PTTEP 1 which produces an average of no more than 1,000 barrels of crude oil per day was a significant milestone for PTTEP staff as it provided real-life experience which was an important preparation for operations in Bongkot field, in the Gulf of Thailand, which has even more geographical challenges and complications. In addition, it also helped to lay the groundwork to prepare the company to expand its investment outside Thailand at a later time.



PTTEP's way of working which is the core strength, is the ability to combine good work practices and culture from many global organizations to become a unique PTTEP working culture.

PTTEP 1 was not only the first petroleum exploration and production project fully operated by a Thai company, it was also the first crude oil field in Southeast Asia to be awarded ISO 14001 certification in 1997. PTTEP started to apply for ISO 14001 certification for PTTEP 1 operations since 1996, after the project passed an inspection by environmental management system experts. PTTEP 1's compliance with the requirements of the environmental management system at a high standard level was another source of pride for everyone at PTTEP.

A man in a dark suit and glasses stands in a modern office hallway. He is smiling slightly and has his hands in his pockets. The hallway has wooden walls and floors, and there are glass partitions and recessed lighting. The lighting is warm and focused on the man.

“We are explorers, proud
and inspired by what we do,
everyone united in one direction,
solidarity and passion
for our profession.”

Maroot Mrigadat

Former President of PTTEP
One of PTTEP's founders



“Industry knowledge
is essential to becoming
a self-sustained
national oil company.”

Dr. Anat Arbhabhrama

Former Governor of the Petroleum Authority of Thailand
Former Chairman of the Board of Directors of PTTEP

More Confident, More Secured

The next great step that ensured growth for PTTEP was located in the center of the Gulf of Thailand in 1988. The Thai government at the time negotiated to buy back the natural gas field Block B or Bongkot field from Texas Pacific Thailand Company Limited in 1990. PTTEP signed a joint venture agreement to develop Bongkot field with Total, Statoil, and British Gas, with PTTEP as a major shareholder.



Joint ventures with foreign companies were opportunities to learn about petroleum exploration and production operations. The key component of this particular joint venture was that Total, the operator of Bongkot field for the first phase, would have to transfer its operatorship to PTTEP within five years from the first date of production in 1993. To co-develop a commercial petroleum field, with a partner, PTTEP needed agility in working. Therefore, management prepared a corporate development plan for PTTEP, which could be considered a key historical document for PTTEP, consisting of a corporate management plan on operation including exploration, engineering, procurement and logistics, and production operations, as well as commercial affairs, including business, human resources and finance and financial structure. The plan also established rules and regulations on procurement, budgeting, finance and accounting, and human resources management to meet the same standards as other leading global oil companies. The corporate plan was approved by the National Energy Policy Committee and the committee of the Petroleum Authority of Thailand.

The historical milestone for PTTEP had begun, and we take pride in being a Thai company that explores and produces energy supply for all.

Looking back at the very first steps when petroleum exploration was a new and challenging business for Thailand, it was hard to believe that there would be a Thai organization successfully and independently securing business stability and growth in petroleum exploration and production, today. This is due to the support of several global energy companies, such as Total. Their cooperation in the transfer of knowledge, helped prepare PTTEP for the operatorship transfer of the Bongkot field. Through training and working on Total's many projects across the globe, PTTEP staff gained the knowledge and experience that would be translated into PTTEP's working culture. The foundations that have enabled PTTEP to gain recognition as a petroleum exploration and production operator today.



“For a company to become successful, employees are the most important factor. Talented and committed staff have contributed to our strong growth.”

Dr. Prajya Phinyawat

Chairman of the Board of Directors
and Chairman of
the Independent Directors Committee of PTTEP
Former President of PTTEP

“We are proud that the growth of our company has contributed to the economic development of the country. PTTEP is regarded as an exploration and production company that is second to none in the region”

Viset Choopiban

Former Chairman of
the Board of Directors of PTTEP
Former President of PTTEP



Success is the Driving Force

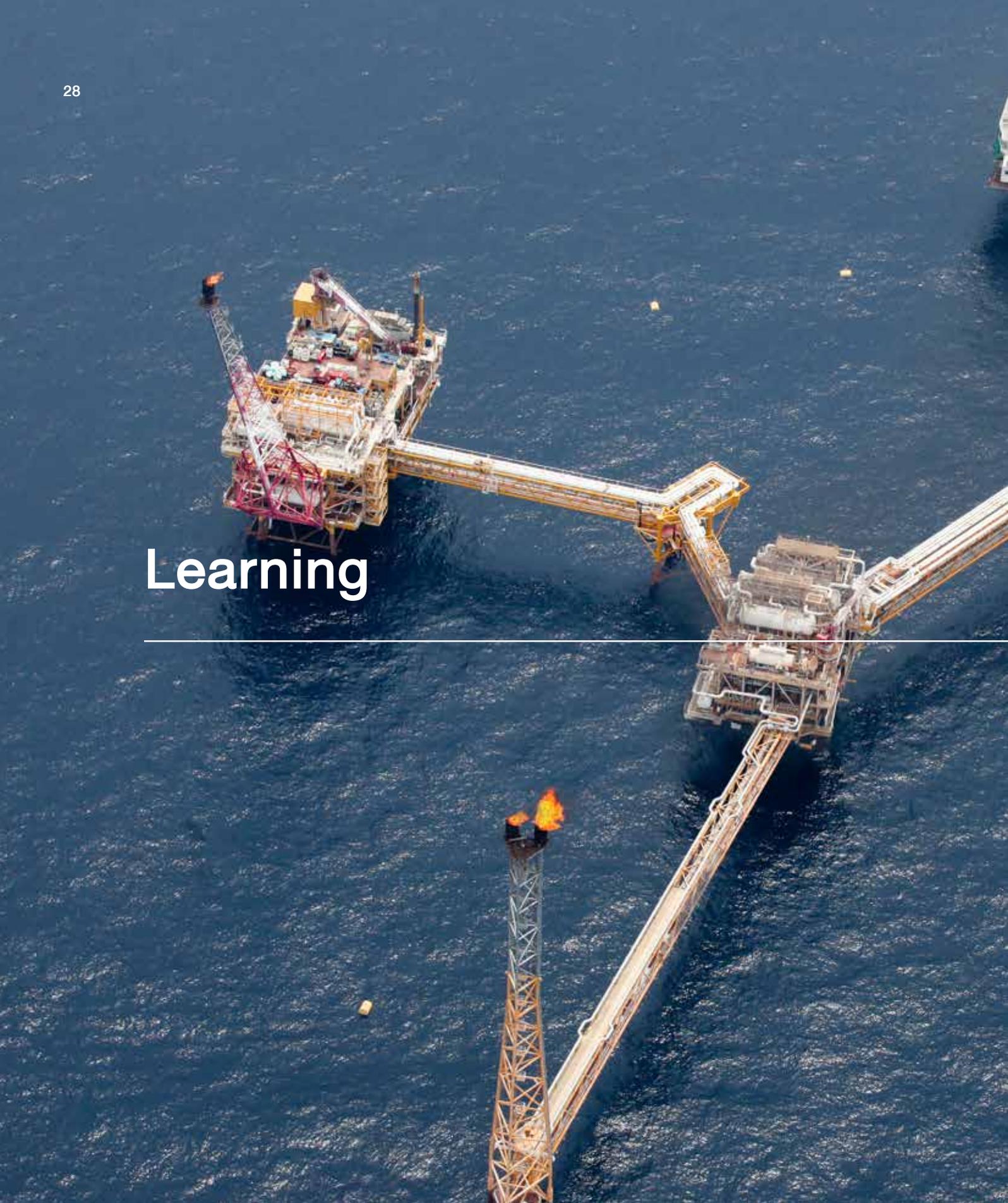
Another important step of PTTEP's growth is the company's listing on the Stock Exchange of Thailand in 1993. Because petroleum exploration and production requires significant amounts of investment. Listing on the stock market was critical as it would allow the company to raise capital to support operations and crucial business expansion.

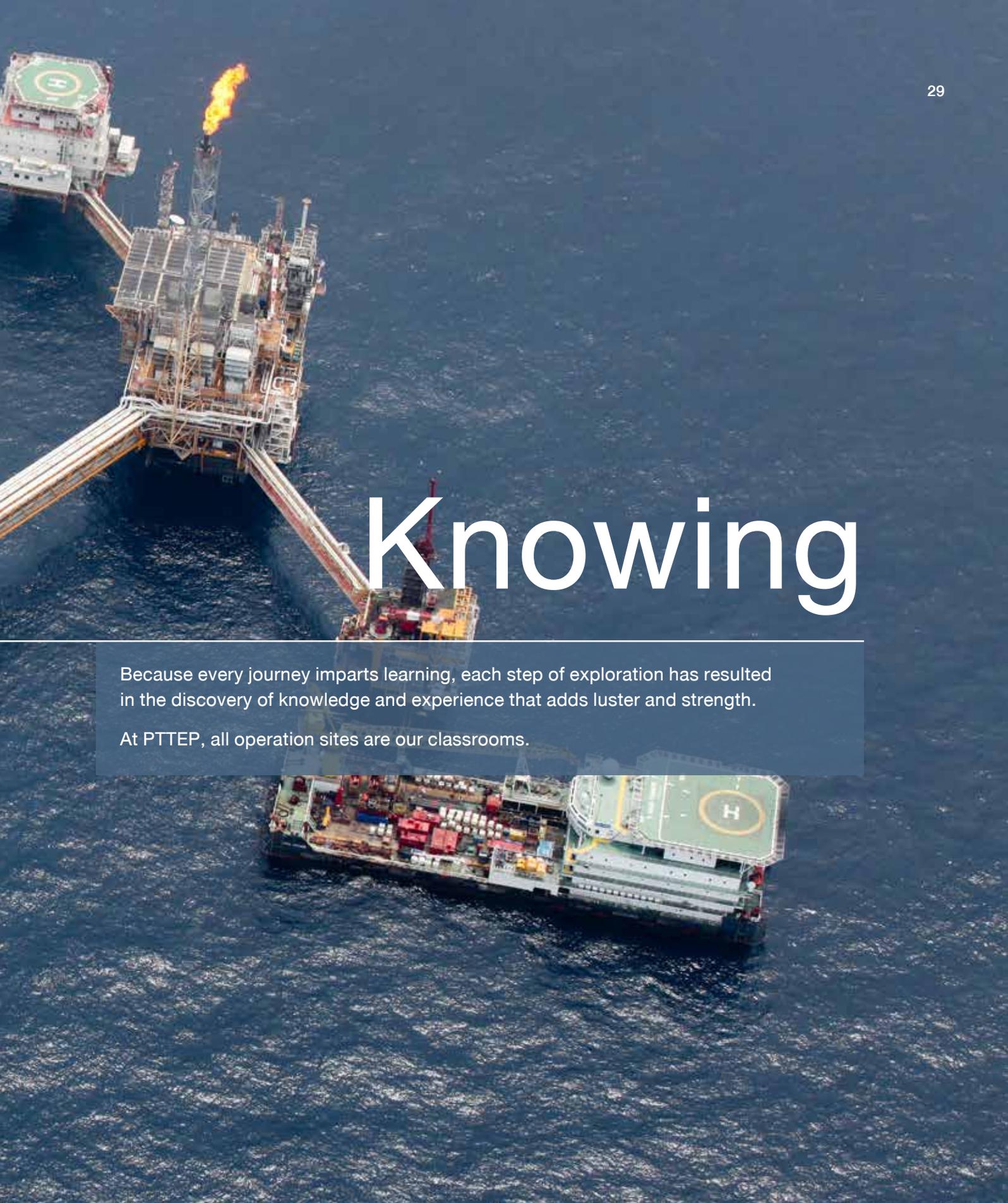
Another advantage of entering the stock market was that it would be an important driver for PTTEP to continuously develop every aspect of the organization and the way it works. All employees would have to do their best to seek knowledge to develop themselves and PTTEP, while abiding by Thai rules and regulations related to the listed companies to demonstrate operational transparency and build confidence among investors.

This journey is proof of the limitless capability of PTTEP staff in taking on and surmounting new and unknown challenges to lay the foundation for energy self-reliance for future generations.



Learning



An aerial photograph of an offshore oil rig in the middle of the ocean. The rig is a complex of metal structures with a central flare emitting a bright orange flame. It has two helipads, one on the top left and one on the bottom right. A support vessel is docked at the rig's legs. The word "Knowing" is overlaid in large white font across the center of the image.

Knowing

Because every journey imparts learning, each step of exploration has resulted in the discovery of knowledge and experience that adds luster and strength.

At PTTEP, all operation sites are our classrooms.

We Learn, We Grow

In 2020, PTTEP has more than 40 petroleum production and exploration projects in 15 countries. But before arriving at this point, the company has had to learn from the challenges and obstacles it has faced. One of the most important first challenges occurred right in the heart of the Gulf of Thailand when the Thai Government bought back the Bongkot concessions from Texas Pacific in 1988. Later in 1990, PTTEP, in its capacity as the state's mechanism, formed a joint venture with Total, British Gas, and Statoil. PTTEP held a major interest, with Total, the operator of the project in the early stage.

Operatorship transfer from Total to PTTEP would be one of PTTEP's most important and significant missions, in response PTTEP dispatched staff to learn every aspect involved with the running and management of a petroleum field. Thanks to Total's expertise and its willingness as a partner in the transfer of knowledge, the operatorship transfer of the Bongkot concessions to PTTEP was accomplished in 1998, the first time Thais had operated a petroleum field.

PTTEP continued to develop and expand its knowledge which resulted in its discovery of the Bongkot South field in 2004 from which production began in 2012, making the Bongkot Project the largest gas field in Thailand, in term of gas reserves.

The knowledge accumulated from the "Bongkot School" has been applied at several other projects in many countries, including Myanmar where the company has successfully shifted from its role as a "learner" to become more like a "coach", training its Myanmar team to be capable of operating and managing petroleum assets, much like the opportunity that Total gave to PTTEP.



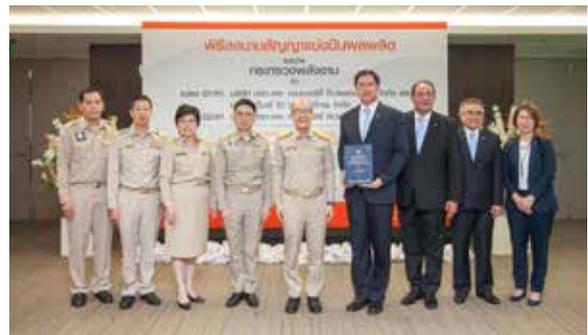


“The Bongkot gas field enabled us to take another step up. It was a school that equipped Thais with E&P knowledge and eventually enabled PTTEP to become an operator. It was the place that allowed us to shift our role from a “learner” to a “coach”. Importantly, Bongkot is the future of Thailand’s energy security as it has always been.”

Phongsthorn Thavisin
President and Chief Executive Officer of PTTEP

Since its first production in 1993, the Bongkot gas field has served Thailand’s demand for petroleum with its current natural gas production capacity of more than 900 million standard cubic feet per day, and condensate of more than 30,000 barrels per day, which is able to feed six 800-megawatt power plants, generating income of more than Baht 244,491 million for the country throughout almost 30 years. This “classroom” has also provided an opportunity to learn, develop, and foster knowledge in petroleum exploration, development, and production for Thai personnel as well as contributing to Thailand’s development.

2018 marked another extraordinary year for PTTEP when it was awarded the production sharing contract for Bongkot whose current concessions were about to expire in 2022 and 2023. PTTEP’s offer was grounded in the company’s confidence in the ability of its team to maintain continuity of production, while maintaining efficiency at competitive costs, as well as its determination to ensure the continuity of natural gas production to secure the energy supply for the nation over the long term.





Challenge under the “Sun”

Arthit (meaning “Sun” in English) is another important natural gas field that has been fully operated by Thais. Situated 230 kilometers off the coast of Thailand’s Songkhla Province, Arthit is the first petroleum block that PTTEP has been the sole operator, overseeing every step from exploration, to development, and production, in collaboration with its partners which included Unocal Thailand (now Chevron Thailand Exploration and Production Limited) and MOECO (a subsidiary of Mitsui Oil Exploration). This further proves the confidence of our partners in PTTEP’s credentials and reputation as an operator from the successful track record of its team at Bongkot.

Following an intensive and lengthy preparation of about 10 years from the initial stages of exploration, development, to production, the Arthit Project commenced natural gas production in 2008. At that time, it was the largest petroleum project in Southeast Asia that utilized state-of-the-art technology, and an environmentally-friendly production process in every step.

In 2001, His Majesty King Bhumibol Adulyadej The Great graciously bestowed the name **“Navamindra Petroleum Area”** to the areas of the Bongkot and Arthit fields. The royal title has bolstered the spirits of PTTEP employees, and the Navamindra Petroleum Area itself has become strategically important, supplying approximately 35 - 40% of the domestic natural gas supply that generates electricity for household and for many industries in the country.

Through the knowledge gained and applied from one project to the next, PTTEP has become technologically capable and be able to stand on its own feet, allowing PTTEP to later expand its petroleum exploration and production business from Thailand to an international level.

Expansion into ASEAN

Overseas expansion is another important dimension of growth for PTTEP. Especially in light of Thailand's limited petroleum resources, PTTEP has to continue to look overseas for opportunities in parallel to its domestic focus, to maintain growth.

Myanmar became the first country that PTTEP invested in overseas, following its participation in the **Yadana Project**, a newly discovered major gas field at that time. Overseas expansions have bolstered PTTEP's production profile and financial positions, enabling the company to maintain momentum, while opening up a chance to learn many more valuable lessons.

Among others, PTTEP has learnt that within this region, relationships really do matter. If the relationships are fostered on trust, it is easier to work and collaborate together. This is just one of the many invaluable cultural lessons learnt by PTTEP and its staff from first-hand experiences working with different cultures and how mutual benefit and understanding can contribute significantly to business.



The power of partnership in Myanmar began with the first step in 1991 and today, PTTEP has been a contributor to the development of the petroleum exploration and production industry in Myanmar which has created mutual benefits for both countries. One of the important projects is Zawtika which became famous for the rapid installation of the central production facilities whilst maintaining the highest international safety standards. Another showcase project to include soon will be the Gas-to-Power Project which will involve investment in a gas-fired power plant in Myanmar.

Malaysia is another Southeast Asian nation where PTTEP has investments. In 1994, PTTEP established a joint venture with Petronas Carigali, a subsidiary of PETRONAS, Malaysia's national oil company, with an equal 50% interest. The joint venture, named Carigari-PTTEP1 Operating Company Sdn. Bhd. (CPOC), was formed to conduct exploration and

development of petroleum resources from the Malaysia-Thailand Joint Development Area (MTJDA)'s B-17 Block. Several discoveries of oil and gas were announced subsequently.

The CPOC Project provided a challenging experience for PTTEP from the very beginning of negotiations to the designs stages. Eventually, all issues were resolved and construction was completed as planned and able to deliver natural gas within 5 years. The design blueprint of the Arthit drilling platform was adapted to use at the CPOC project which shared similarities in quality and quantity of the natural gas supply. This again exhibited PTTEP's capability to learn and utilize knowledge from other projects to efficiently overcome other challenges. It also demonstrated the power of synergy and collaboration between the two partners to create mutual benefits for both nations.



“Keep it simple, there’s no need to complicate things. Figure out what the target is and get there. Don’t make the problems an issue, because there will always be problems. You have to think about it the other way round and ask how you can do more? And if you have to solve many problems along the way, it will help to make your target even clearer. When this is combined with 3 other factors of people, planning and oversight which if exercised as you originally planned, will result in you achieving your goal.”

Suksant Ongvises
Executive Vice President,
Operations Support Group of PTTEP



Creating a Model to Extend Business

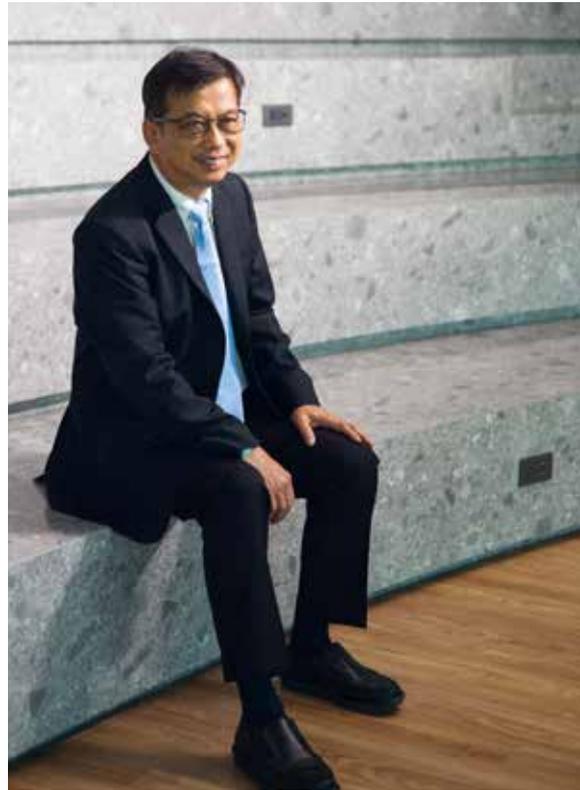
The Gulf of Thailand Model (GoT) is another example of PTTEP's ability to cultivate knowledge and experience from operations at Bongkot and Arthit Projects into a blueprint for future growth. PTTEP has taken the opportunity to learn and practice exploration and drilling techniques for marginal gas fields, and developing it into a unique set of knowledge.

While working on a joint development project in Malaysia, PTTEP successfully utilized the GoT Model and applied this knowledge to its neighbouring country.

The application of the GoT Model in the joint development project first originated during an oil price slump in 2015 - 2016. The model has proven to be so impressive that it has played an instrumental part in PTTEP obtaining more operations in Malaysia afterwards.

Most importantly, the GoT Model concept has reflected PTTEP's knowledge in exploration and production, as well as its sincerity to apply this knowledge for the mutual benefit of its business partners, which in turn has created confidence and trust between each partner.

It could be said that the Gulf of Thailand Model is knowledge that has been applied that has become wisdom and clearly illustrates PTTEP's proficiency in petroleum exploration.



“The key and the most important thing in petroleum exploration is that we have to lay the foundations for our people. You can find a petroleum field anywhere. But the people must be confident, knowledgeable and capable of building and furthering the knowledge they have accumulated. To gain this knowledge, this foundation, one has to have experience gained from exploring new fields.”

Kanok Intharawijitr
Executive Vice President,
Geosciences, Subsurface and Exploration Group
of PTTEP

Heading to Further Destinations

Apart from expanding businesses into countries in the region, PTTEP has also established itself in the Middle East. The Middle East does not only possess great potential in petroleum exploration and production, investing in the region can also help in fostering and strengthening relationships between the governments of each country, paving the way for more business and trading opportunities for both the countries.

In 2002, PTTEP began its operations in Oman, a Middle East nation which has a history of strong economic growth and a continuous investment in infrastructure which in turn stimulated demand for oil and gas. The company was awarded the concession to onshore Block 44 from the initial exploration phase, to the discovery of a gas deposit to its development and production, this successful discovery encouraged PTTEP to further expand its investment in the region.

The strategic expansion into the Middle East is an example, where opportunities to jointly operate high potential petroleum fields, with internationally-recognized petroleum exploration and production companies has fostered partnerships and led to exchanges of knowledge and learning that will contribute to the growth of PTTEP in the future.

Learning on every step, on our journey for energy security, PTTEP have applied these lessons to adjust and adapt to every changing situation, allowing us to have confidence, trust, and determination in our ability to maintain the sustainable growth of PTTEP, and our partners.





“Don’t be afraid of challenges, show determination to accomplish your work, having good partners can contribute a great deal to success. To have good partners, you must be sincere and trust each other. The path to success, will have some mistakes or errors caused by uncontrollable factors, but don’t be discouraged, every problem has a solution. Every crisis comes with an opportunity, but you have to be aware, you have to see things clearly and think it through, that way you can solve the problems, seize the opportunities and bring success to both yourself and the company.”

Vuthiphon Thuampoomngam
Executive Vice President,
Human Resources, Assurance,
and Transformation Group of PTTEP

Growth



A photograph of four workers in orange safety suits and white hard hats walking on a yellow-painted deck of an offshore oil rig. The rig's complex structure of pipes and metal beams is visible in the background, extending towards the ocean under a clear blue sky. The workers are wearing safety glasses and have communication devices on their belts.

Stability

PTTEP is working to strengthen and sustain its growth based on its vision as the “Energy Partner of Choice”, a vision that emphasizes partnership with all stakeholders to synergize and create mutual value in a sustainable and solid manner.

To achieve this sustainable growth, PTTEP is not only focusing on its core business of petroleum exploration and production but is also searching for opportunities in new technology-driven businesses such as robotics and artificial intelligence.



Sustainable and Solid Growth

After learning and growing for more than three decades, PTTEP is traversing a crucial transition period for the industry that will be defined by many challenges, among them the Fourth Industrial Revolution and the energy transition, both driven predominantly by technological disruption. There are other challenges too, including the possibility of trade wars, a rebalancing of power in the world and among the oil producing nations, unprecedented supply from unconventional sources such as shale oil and shale gas, and rising awareness of environmental impacts and sustainability.

As a major upstream energy producer in the country, PTTEP recognizes its responsibility to balance short- and medium-term evolution with sustainable growth over the long term. The company has therefore redefined and remapped its key strategies over the past 2 - 3 years to comply with its new vision, **“Energy Partner of Choice”**, reviewing its key strengths and weaknesses and ability of coping with changes as and when they occur.

The new vision has in turn given rise to the **“Coming Home”** strategy, which is a refocus of investments to areas where PTTEP enjoys experience or a comparative advantage, and more importantly, has good strategic partners. That has led to the redeployment of investments to Thailand and the Southeast Asian region, in particular Myanmar and Malaysia, as well as searching for new opportunities with strategic partners in such high-potential areas such as Oman and United Arab Emirates (UAE), where petroleum production costs are lower. Both Middle East nations also enjoy geopolitical stability and a strong well established petroleum industry and partners who can assist PTTEP in its drive to extend its natural gas value chain to encompass the production and transport of LNG, one of its key strategic goals.



“Since winning these projects in the Gulf of Thailand, PTTEP has been regarded as a company that dares to think and act, and has earned us recognition. Our investments in the Middle East and other areas reflect that recognition. Investments are not only about money, but also rely on strategies, the capacity of our people and the organization itself. We believe a successful business comes from an ability to change competitors into partners – the “Energy Partners of Choice” – that can create mutual value over the long term.”

Montri Rawanchaikul
Executive Vice President,
Production Asset Group of PTTEP



“Even during a downturn in the economy or oil prices, there will be both challenges and opportunities. Certainly, we have to solve the current problems, whilst at the same time, we must not cease to look for PTTEP’s future opportunities, that match with the company’s long-term strategies. We must be ready to change our thinking and work processes, blending our past experience with new technologies, to ensure efficient management and to be ready for future changes, which will allow PTTEP to step further solidly and sustainably.”

Natruedee Khositaphai
Executive Vice President,
Strategy and Business Development Group of PTTEP

The shift from competing for No. 1 position in the sphere of petroleum exploration and production to a focus on collaborating with strategic partners for mutual growth, as well as a refocus of its growth areas, have contributed to PTTEP’s success over past few years in bidding for and acquiring many important energy assets both in Thailand and overseas that will help support the growth of PTTEP and the energy security of the nation in the years to come.

Among the notable transactions are the Bongkot and Erawan projects in the Gulf of Thailand, which together produce 70% of all domestic gas supply in the country and for which PTTEP and its partner, Mubadala Petroleum from the UAE, successfully bid in late 2018. PTTEP won the right to explore and produce petroleum from both the Bongkot and Erawan projects, for which the current concessions expire in 2022 - 2023.

Over the past couple of years, PTTEP has placed great emphasis on its “Expand” strategy as evidenced by its successful bidding for many important projects including the Bongkot and Erawan projects in Thailand, the acquisition of Murphy Oil Corporation in Malaysia, and the purchase of Partex Holding B.V which has petroleum assets in Oman, UAE and other countries. From 2020, PTTEP will focus more on its “Execute” strategy to push forward its projects and assets to achieve planned rates of return on investments and targets, especially the smooth transition of the Bongkot and Erawan project operations as well as other acquired assets. It will also speed up exploration activities in potential projects that can help PTTEP grow further in the future.

Successes aside, PTTEP has also faced challenges in 2020 on all fronts including the unexpected outbreak of the coronavirus (COVID-19), a fall in oil prices and fluctuations to trade and the global economy. This has prompted PTTEP to revise its strategy to navigate the crisis while, at the same time, looking out for opportunities.





Changing and Developing Continuously

In addition to adjusting its strategies, PTTEP has also revamped its organizational structure to streamline operations, enhance efficiency and brace for the digital era. The company embarked on a program of digital transformation in late 2018 with the key objective of developing and applying technology to support operations of every division and function group ranging from exploration, drilling and development to production, and supporting functions such as finance and human resources. The aim is to shorten processes while enhancing efficiency including applying Robotic Process Automation and Big Data to various processes such as exploration and drilling data analytics and predictive maintenance.

Last year, PTTEP successfully developed 7 digital solutions that have brought benefits currently being applied worth approximately USD 45 million.

The integration of digital technology with work processes resulted in a reduction in costs and an improvement in productivity for about USD 500 million in 5 years, from present to 2024.



“From now on, our main mission will be to accelerate the value enhancement of existing assets (Execute Strategy) both in terms of improving productivity and reducing costs. We have to speed up the development of projects so that they generate revenue as quickly and as efficiently as possible. Furthermore, we must bring the Gas-to-Power project into operation soon.

At the same time, we need to continue accelerating human resource development to equip our employees with the competencies and skills they need, digital skills in particular.”

Chayong Borisuitsawat

Executive Vice President,
Engineering and Development Group of PTTEP

Developing and Furthering Knowledge

With its beginning as a joint venture partner who learnt from its foreign counterparts, PTTEP would not have been able to grow and progress as much as it has without making further effort to build on and develop further that knowledge, especially in its core business of exploring and producing petroleum.

Furthermore, PTTEP has been able to apply the knowledge and experience it has gained from developing domestic petroleum fields to its overseas assets. As referenced earlier, the company has been able to build upon the knowledge acquired from the Gulf of Thailand, where the subsurface structure is interspersed with small pockets of petroleum reservoirs. Which has become known as the Gulf of Thailand (GoT) Model, and has been applied to the exploration and development of gas fields in Malaysia. The GoT Model has enabled the development of marginal gas fields in that zone at a competitive cost.

Today, PTTEP is prepared for all eventualities thanks to the competencies and wisdom it has developed over the decades. Nonetheless, the company still has an important mission to fulfil in imbuing the next generation of staff with the necessary knowledge, competencies and strengths, and enabling them to build upon that knowledge. This is particularly important given that the technologies involved in the drilling of shale oil/shale gas have reduced costs in exploration and led to increased supply in the oil market. This could result in an oil and gas producer like PTTEP seeing lower returns on investment than in the past unless it is able to enhance efficiency, identify better petroleum prospects, or extend its exploration activities while lowering costs.

As part of its policy to promote and support research and development and the furthering of knowledge, PTTEP has set up a supercomputer

center for its seismic data processing, and thus no longer has to send data for processing overseas. Furthermore, the PTTEP Core Research Center has recently been set up at Wang Noi, Phra Nakhon Si Ayutthaya Province, with 30 - 40 researchers and support staff. The company has also linked research work to career promotion as a way to encourage employees to undertake more research studies.

The accumulation of experience and constant furthering of knowledge has allowed PTTEP to advance its exploration capabilities. Among other achievements, in June 2019 the company as the operator announced the discovery of a large gas field in the SK410B block off the Sarawak coast in Malaysia. The field has the potential to feed gas to Malaysia's LNG plant in the near future.

Continuous adaptation and development has helped PTTEP to reduce its cost structure compared to other companies in the petroleum exploration and production industry, while also maintaining its efficiency and productivity.



Financial Strengths

The exploration and production business is not only risky and sensitive to volatility from demand/supply and the price of petroleum products, it is also, by its very nature, capital intensive. A strong balance sheet and financial discipline are thus vital to a petroleum company's stability and sustainability, allowing it to weather crises and market volatility, while also enabling it to seize opportunities during normal and crisis situations.



“In terms of financial management, in my view, sustainability is an important target for PTTEP. We have to look after our finances to make sure the organization is conducting its business sustainably over the long term. We must apply financial discipline in our investments and not overleverage ourselves. For example, when oil prices are volatile, we must seek proper investment opportunities. During a downturn, we have to reconsider investment plans to reduce or reschedule non-critical activities. In terms of financial strength, I think we are on par with the world's leading oil companies. While we aren't as big, our financial management is second to none. Most recently, S&P announced it was maintaining our credit rating at BBB+, which is the same level as Thailand's current sovereign credit rating, illustrating once again our continued strength both in relation to a solid capital structure and robust liquidity.”

Sumrid Sumneing
Executive Vice President,
Finance and Accounting Group of PTTEP

The COVID-19 crisis, which has led to a global economic recession and an 18-year low in world oil prices of USD 20 a barrel during the first half of 2020, has become another important test of strength for PTTEP. The company has been able to steer through the crisis well when compared to other energy producers, as evidenced by its profitability in the first half of 2020 and the confidence of investors who oversubscribed by 15 times to the 7-year, USD 500 million debentures the company issued during the pandemic in early June.

A couple of months prior to that, PTTEP successfully launched a 40-year debenture, which became one of the longest-maturity debentures ever issued in Southeast Asia, at a coupon rate of lower than 4%.

PTTEP has maintained stringent financial discipline and has continuously pursued improvements in efficiency as well as in cost reduction, beginning with the “SAVE to be SAFE” project in late 2014, which was followed by the “SPEND SMART to Business Sustainability” campaign to strengthen its effort on further cost optimization. The current “ENTERPRISE” project focuses on digital transformation and organizational transformation. And in a bid to navigate the economic crisis, PTTEP has set a target to cut its operating expenditure (Opex) and capital expenditure (Capex) by a further 15 - 20% this year.

Furthermore, to manage higher economic volatility, PTTEP is speeding up its working processes through the adoption of digital tools and by increasing the amount of its financial liquidity that will allow it to steer through crises and volatility while allowing it to seize opportunities as they arise.





“In the next 5 - 10 years, PTTEP will continue to be a major component of the PTT Group and Thailand in ensuring energy security. We might also see PTTEP in other dimensions as it ventures into new businesses. We would like to see PTTEP as a national leader in robotics and artificial intelligence.”

Phongsthorn Thavisin

President and Chief Executive Officer of PTTEP

Sustainability is Key

Nonetheless, the forecast energy transition and the global shift towards a new energy model have prompted PTTEP to realize the need to develop related businesses and to search for new businesses as a way to diversify risk, rebalance, and reduce fluctuations of income from its core business of petroleum exploration and production.

This realization has led to the current drive to find an opportunity to expand into the LNG and Gas-to-Power businesses. PTTEP is confident that natural gas still

has a long future as the cleanest fossil fuel that can be efficiently converted into electricity to meet the ever-increasing demand for electricity consumption.

Furthermore, by leveraging its technological strength, PTTEP is stepping into new businesses that are driven by technology such as renewable energy and artificial intelligence and robotics and, in this respect, set up AI & Robotics Ventures Company Limited (ARV) two years ago.





Views from PTTEP's Partners

PTTEP recognizes that our vision and goals are best reflected through words from policymakers, joint-ventures and all stakeholders.



“In Thailand, we consistently secure sufficient domestic energy resources covering electricity, oil and natural gas. This success resulted from the strong collaboration and support from related parties who shared the same goal – the energy security of the nation. As the Minister of Energy, I have realized that building energy security is never an easy task, many relevant organizations have been working with great efforts behind the scenes. PTTEP has been a pivotal component producing natural gas to Thailand for many decades. Together with this, the company also has well complied with energy policies of the country.

Key success factor enabling PTTEP to secure and sustain their growth is rooted in their “people”. They have many professionals who are capable with a strong expertise, especially their new-generation employees who are equipped with digital literacy skills. PTTEP motivates their staff and helps them unleash their full potential.

What has allowed PTTEP to retain its competitiveness, while many oil and gas companies have suffered from the headwinds of the global economy, is their highest standards of practices and their sound strategy. In my view, in order to grow and prosper in the future, PTTEP would need to focus on technology, as this will not only impact their core business but will also create new business opportunities for their future growth. To my knowledge, PTTEP is seriously putting this into practice. Therefore, I am certain that PTTEP shall continue to be the main organization to secure energy supply and drive economic growth for Thailand for years to come.”

Supattanapong Punmeechaow
Minister of Energy



“Partnerships are very common in the oil and gas business, particularly the upstream sector. These partnerships can be between International Oil Companies (IOCs), National Oil Companies (NOCs), governments, or other investors.

When the partnership is with an entity such as PTTEP, a host government like Oman can maximize the benefits, thanks to the integrated energy structure of PTT Group, PTTEP’s parent company, which covers marketing, retail, refineries, petrochemicals and more. Over the years, our partnership with PTTEP has opened doors beyond exploration and production.

Our relationship with PTTEP over the last 20 years or so has provided opportunities that have enhanced the Oman-Thailand bilateral relationship across several dimensions. This is because the Omani economy is also in growth mode in many sectors, not only in the oil and gas sector.

With our close cooperation, I believe what is good for Thailand is good for Oman. With the focus now on Energy Transition, I am confident Oman and Thailand will continue their cooperation in the decades to come on conventional, renewable, and clean energy such as hydrogen.”

H.E. Dr. Mohammed bin Hamad Al Rumhy
Minister of Oil and Gas of the Sultanate of Oman



“As long as man remains a social animal, we will still need to travel to meet each other. Demand for energy will remain in one form or another. And for Thailand, if we cannot produce it by ourselves, every drop of oil or natural gas will have to be imported. I therefore believe PTTEP, as a major petroleum producer, will maintain its important role as an upstream unit, one that will continue to produce energy to meet demands and facilitate the lives of all Thais in the future.

I am a Thai who feels proud of PTTEP. Many respected individuals have told me about the growth of PTTEP from its start as a joint venture company that had to learn from foreign companies, through its development until the day came when it was able to assume full operations, allowing Thailand to explore and develop its own energy resources. This has helped us a lot and improved the entrepreneurship of Thais in this and related industries.

Therefore, volatility and uncertainty are the order of the day. To become a sustainable organization, PTTEP has to be a high-performance business with good leaders, have technological foresight or the capacity to predict future scenarios, as well as sound planning and the ability to pursue its goals systematically. I appreciate that PTTEP has been continuously reconsidering their business strategy to align with any circumstances. We wish you even more success in the future and maintain as the company that providing a sustainable petroleum supply to the country.”

Sarawut Kaewtathip

Director General, Department of Mineral Fuels





“PTTEP has demonstrated that it has conducted its businesses with social responsibility, following the rules and regulations, while contributing to the creation of economic prosperity and protecting the environment, of the countries in which it operates. This is in accordance with the PTT Group’s guidelines that emphasize good corporate citizenship everywhere we operate as well as the PTTEP’s “Energy Partner of Choice” vision.

To achieve sustainability, PTTEP needs to have costs and technologies that will enable them to be competitive and expand its businesses in the search for energy, both in conventional fossil fuels as well as LNG and other types of fuels to brace for changes in the future.

PTT and PTTEP have worked closely for more than 35 years. We have jointly created energy security for the country, allowing Thailand to procure energy by itself, reduce dependency on energy imports, maximize the use of indigenous resources, and multiply the value of feedstocks. If PTTEP didn’t exist, there would be no natural gas separation plant and no development of the petrochemical industry, operated by Thais in the country.”

Auttapol Rerkpiboon
President and Chief Executive Officer
of PTT Public Company Limited



“Mubadala Petroleum has invested in Thailand’s petroleum exploration and production industry for over a decade and is recognized as a significant oil producer. However, we entered into our first joint investment with PTTEP, in the Erawan gas project, in 2019. The partnership between both companies further developed with PTTEP’s entry to Oman’s Mukhaizna project (Block 53), in which Mubadala has held a stake since 2005. Beyond this, and within the broader Abu Dhabi partnership context, PTTEP has recently become involved in several exploration blocks in the Emirate of Abu Dhabi.

There are many synergies between our two companies. We are both underpinned by our commitment to represent our national interests as well as committed to being globally competitive. The Erawan project, which PTTEP will operate on behalf of the joint venture, is a critical milestone for Mubadala Petroleum, which has a gas-biased strategy. The project will be our first investment in a gas project in Thailand and be a key contributor in meeting Thailand’s demand for domestic gas well into the future.

We strongly believe that our objectives are aligned and through our combined strengths in the E&P sector, together with a focus on financial sustainability and profitability, we are very optimistic that we can expand this partnership further.”

Dr. Bakheet Al Katheeri
CEO of Mubadala Petroleum

“PTTEP’s home has also been our home for decades, beginning with the Bongkot project and the M5-M6 project in Myanmar in 1990 to the present day and our collaboration on the high impact and complex Mozambique LNG project, which will lay down the foundation for and open new horizons for both companies in the future.

I am convinced that our long-term partnership with PTTEP on Bongkot is a tremendous achievement. It has brought affordable technology and optimized the recovery of domestic resources at the lowest possible cost for Thailand.

The key strength of Total is its highly ambitious safety culture, embedded in our core values and the pioneering spirit that has helped us to build businesses and develop strong positions around the world, even though our domestic resources are virtually non-existent. We never cease to enhance our knowledge, innovate and adapt to overcome different challenges. We appreciate the agility of PTTEP and its capacity to tackle the upcoming challenges in our industry.”

Patrick Pouyanné
Chairman and CEO of Total



“PETRONAS’s commitment to sustainability, which is in line with PTTEP’s vision, will be an important factor in allowing both organizations to synergize and take up the opportunities arising from the changing global energy landscape, especially in the natural gas sector and in other clean fuels, the demand for which is increasing during the current global transition to a low-carbon economy.

Natural gas development is one of our key strengths as we are among the world’s largest LNG producers. Our cooperation with PTTEP, which has investments in gas fields and the LNG project in Malaysia, will benefit PTTEP by enabling it to take part in the integrated gas development project, receive a good return from its investment, as well as ship LNG to Thailand to help strengthen the country’s energy security.

PETRONAS and PTTEP have also expanded our cooperation to other countries such as Myanmar where PETRONAS has signed a gas offtake contract, as well as in Mexico where petroleum was recently discovered in the Polok-1 and Chinwol-1 blocks.



Furthermore, the PTTEP’s recent acquisition of Murphy Oil’s assets has significantly enhanced its position in Malaysia’s E&P sector. This aligns with PTTEP’s strategy of expanding its investment in ASEAN and supports PETRONAS’s own aspirations to develop key petroleum fields in Malaysia and increase domestic production to boost national energy security.”

Adif Zulkifli

Executive Vice President and CEO Upstream
of PETRONAS

“The partnership between MOGE and PTTEP has been well established for three decades, and goes back to the days when Myanmar first opened its doors to foreign investors. PTTEP was one of our first foreign investors and our partnership has stood the test of time thanks to the mutual benefits enjoyed by the two nations, both in terms of economic development and energy security.

The size of Thailand’s gas market and its infrastructure are among the major factors that bolster the feasibility of petroleum development projects. Furthermore, with PTTEP’s expertise and contribution towards knowledge and skills transfer to our domestic workforce through the PTTEP’s Development Program for Oil and Gas Technical Skills, we will be able to enhance the competitiveness and sustainability of projects in the oil and gas industry.

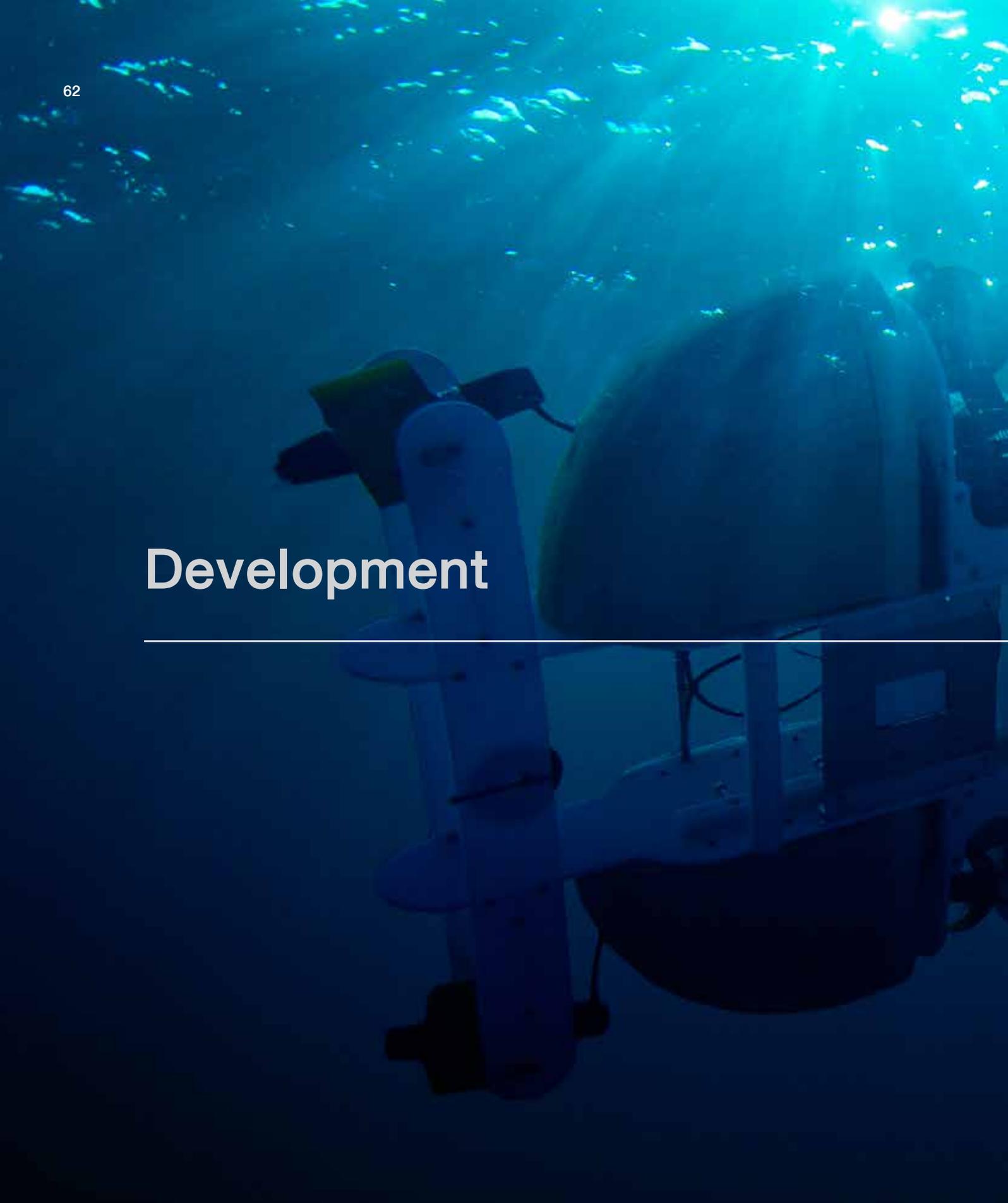
We foresee continued cooperation in the future with PTTEP for the mutual benefit of both parties and our respective nations. We look forward to strengthening and expanding our partnership for future investment such as in power generation that will further increase the benefits and value creation from Myanmar’s gas and lead to greater economic growth in Myanmar.”

U Nyan Tun

Managing Director of Myanmar Oil and Gas Enterprise (MOGE)



Development



Breakthrough

To never stop searching and developing technologies to create innovations and operational excellence is PTTEP's commitment, in order to create additional business values in the future as well as to benefit the society, community, and the environment.

Technology Drives the World

Technology plays a vital role in the development of petroleum exploration and production to allow for higher efficiency and reduction in risk and time.

PTTEP, as an organization responsible for petroleum exploration and production, recognizes the importance of developing knowledge on technology, especially in an era when rapid changes and the transition to the digital age presents new wake-up calls for all industries. The energy industry needs to continually adapt, assess and embrace state-of-the-art technologies, that help reduce costs and increase operational efficiency.

Throughout 35 years of operations, PTTEP has developed petroleum exploration technologies in all areas, such as the design of smaller wells which makes drilling petroleum faster, and at a lower cost, while maintaining efficiency and safety. Also due to the high-temperature operation which is a challenging characteristic of petroleum reservoirs in the Gulf of Thailand, PTTEP has to develop technologies that take this into account to enhance equipment endurance to better withstand such operation.

In our attempt to create new and better things at all times, and to build partnerships with different partners, we are making progress in developing technology. It is an important step in supporting PTTEP's operations to achieve goals.





Areas of Collaborations

Over the past years, PTTEP has focused on collaborating with partners including government and private agencies, and educational institutions, to integrate ideas and operations to produce stunning results, to meet business needs, and to enhance the country's industries.

One of them is a collaboration that takes place at the **Eastern Economic Corridor of Innovation or EECi**, which operates in three eastern Provinces, namely Chon Buri, Rayong and Chachoengsao, in collaboration with the National Science and Technology Development

Agency or NSTDA, to drive the progress of the project in terms of knowledge, personnel development, and infrastructure to meet the needs of the 4th Industrial Revolution.

In addition, PTTEP plans to establish the **PTTEP Technology and Innovation Center (PTIC)**, to develop technologies that support petroleum exploration and production, as well as to develop innovations for the company's new businesses such as artificial intelligence and robotic technologies.

Business Breakthroughs

Starting from a group of staff who were interested in robotic technologies forming a PTTEP Robot Club, engaged in activities such as coding, software design, and building and flying drones. The club was later supported by the company and expanded to research and experiment on robotic designs with real operational applications. Today, that off shoot has advanced to a business called AI and Robotics Ventures Company Limited or ARV, 100% owned by PTTEP.

ARV services include AI and robotic technologies. It focuses on research and development of technologies for new businesses, while adding value to previously developed technologies and innovations. ARV supports not only the E&P related technologies, but also aims to search for technologies that can create additional value for other industries.

The application of ARV services and technologies ranges across air, sea and land, through collaborating with partners from educational institutes, industries, start-ups, as well as, developing personnel to create the innovations to meet business requirements in the future.

ARV's significant, technologies that will advance the development of energy industry include the Subsea Flowline Control and Repair Robot (SFCR) or Nautilus, co-created with a partner, Kongsberg Ferrotech, Norway, and an Inspection-class Autonomous Underwater Vehicle (IAUV), co-developed by Kasetsart University, National University of Singapore, Hive Ground Company Limited, Thailand, and BX CREATIVES PTE. LTD., Singapore.



An Ingenious Invention for Subsea Flowline Maintenance

The world's first Subsea Flowline Control and Repair Robot (SFCR), which is now called Nautilus, is said to represent a turning point in the industry. It's a robot used for the remote inspection, repair, and maintenance of underwater petroleum pipelines. The goal is to operate in the Gulf of Thailand and other areas in Southeast Asia, to reduce the risk from human errors. It can also reduce time and cost associated from such operations by 50%.



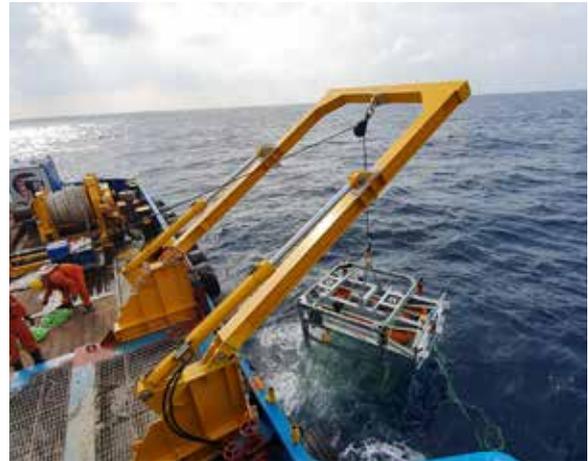
“Kongsberg Ferrotech is a company with a vision to revolutionize the maintenance industry of marine pipelines, from aboveground to undersea. ARV is a company that specializes in technology and focuses on providing the highest value to our partners with modern solutions. Both share the same vision and goals. As a result, ARV is the ideal partner we need.

Throughout my career, I've never met a co-developer who's as eager to exchange as much as ARV. This is the experience I am most pleased with in doing this project. I think that's why we're successful together. Working closely with ARV ensures that we have put our resources in to important areas first.”

Christopher Carlsen
General Manager of Kongsberg Ferrotech

Underwater Inspector

The inspection of undersea equipment, such as petroleum pipelines that are several kilometers long, and go into deeper waters where GPS signal is not available, is made more convenient and efficient through the **Inspection-class Autonomous Underwater Vehicle (IAUV.)** This robot increases the efficiency of monitoring undersea equipment that requires regular inspection to identify defects of pipelines and pedestals. The IAUV helps cut operations costs by more than 50%, with no need for a traditional high cost vessel-based tracking while also reduces operational risk.



“We, as an educational institution, have been able to help with the problem solving, but many of us have learned from working in the project as well. The support came directly from PTTEP.

At the time of the crisis, for example, the outbreak of COVID-19, being self-reliant and not depend on imported technology, become absolutely necessary.

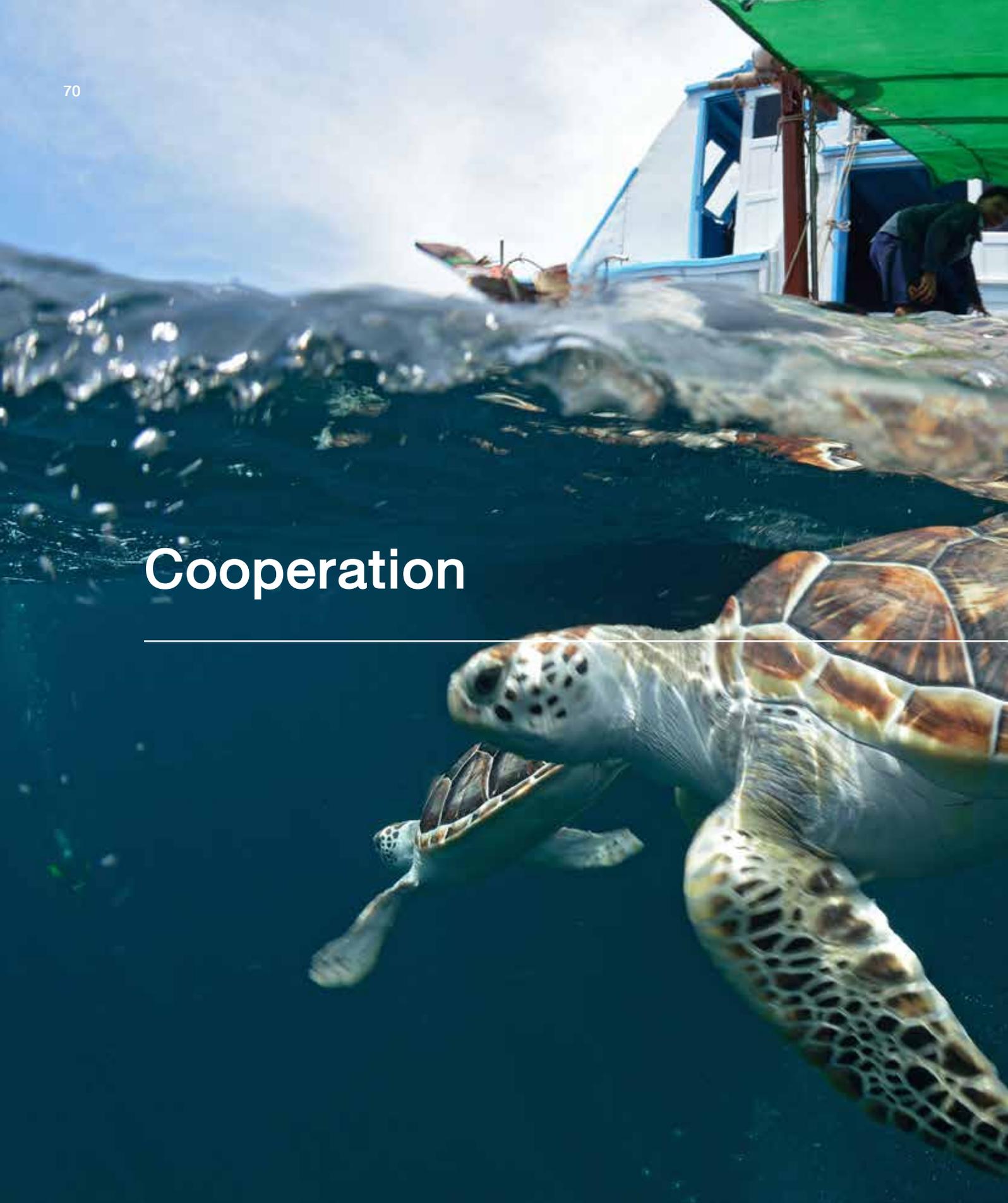
I would like to thank PTTEP for giving an opportunity for our personnel of the Faculty of Engineering, Kasetsart University, to be a part in the development of technology. We learn and grow along the way. This collaboration also indicates a commitment to enhance the technological capabilities and knowledge for Thai people to develop innovations by ourselves.”

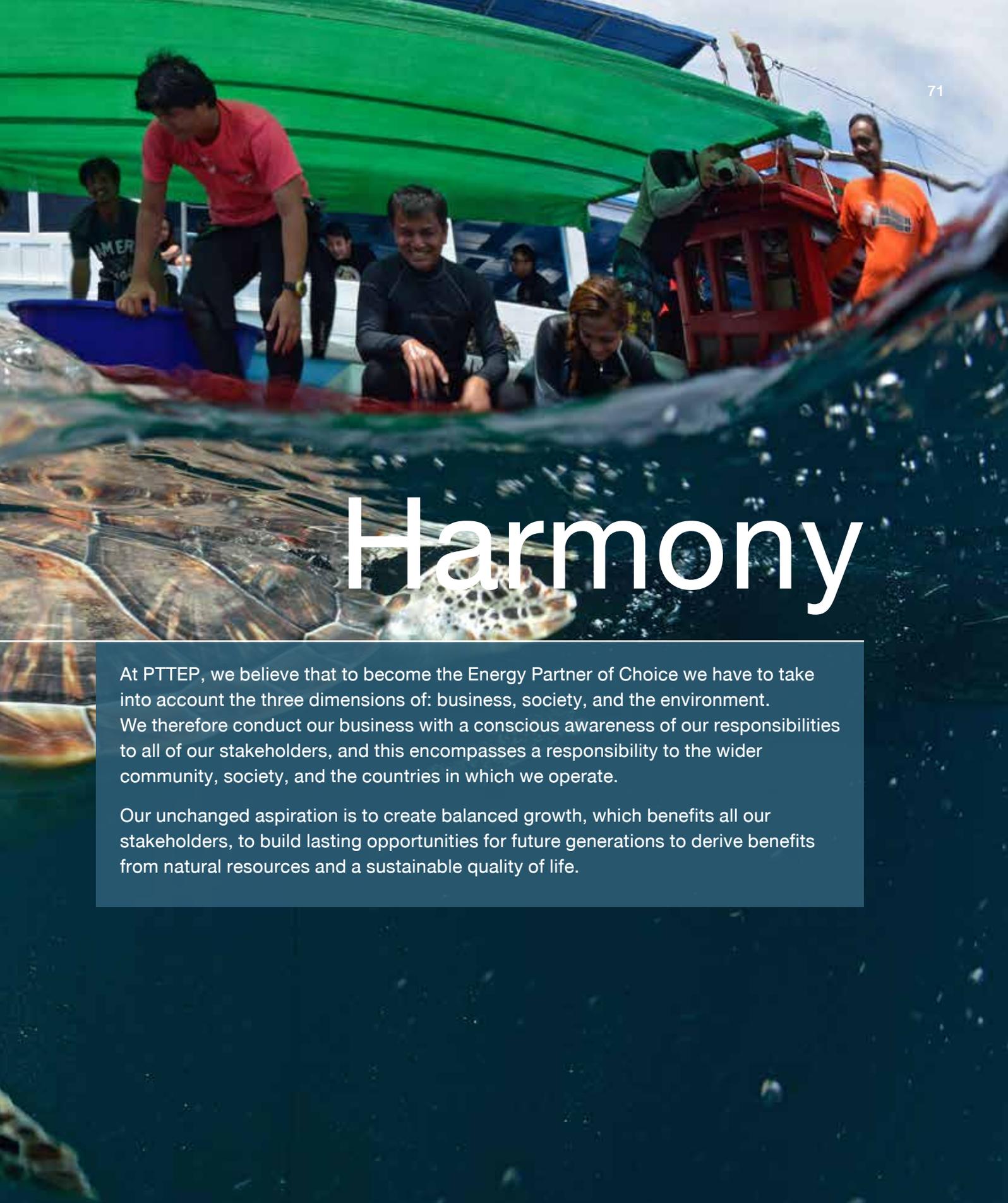
Associate Professor Dr. Peerayuth Charnsethikul
Dean of Faculty of Engineering of Kasetsart University





Cooperation



A group of people on a boat with a green canopy are looking at a large sea turtle swimming in the water. The turtle is the central focus, with its head and front flippers visible. The people are dressed in casual clothing, and the boat has a red structure. The water is clear and blue.

Harmony

At PTTEP, we believe that to become the Energy Partner of Choice we have to take into account the three dimensions of: business, society, and the environment. We therefore conduct our business with a conscious awareness of our responsibilities to all of our stakeholders, and this encompasses a responsibility to the wider community, society, and the countries in which we operate.

Our unchanged aspiration is to create balanced growth, which benefits all our stakeholders, to build lasting opportunities for future generations to derive benefits from natural resources and a sustainable quality of life.

Every Success Begins within Ourselves

PTTEP realizes that the successes of the past 35 years and those in the future originate from one key factor: the power of collaboration.

The limitless potential and capabilities of all our employees, in all discipline, united towards the same goal, has driven the evolution of PTTEP from a department responsible for petroleum exploration and production to a global E&P company today.

To continue in this direction PTTEP must remain the best organization for all our employees, taking care of their quality of life, to be happy and to work to their full potential, ensuring that everyone who works with us returns home safety. Organizing activities and training to continuously improve the ability of both executives and employees.





“PTTEP is like a home with a family-like work environment. We all have a common goal to become an “Operator” and achieving the results that were intended when PTTEP was first established. PTTEP has overcome many challenges since becoming an operator domestically and overseas.

Today, there are new challenges that force us to adapt and to build the next generation who will share the sense of ownership and pride in contributing to PTTEP’s growth. New generation employees are assertive, up-to-date and equipped with digital skills. More importantly is to make sure that their voices are heard and opportunities must be provided for them to have the chance to think outside the box, to drive PTTEP’s growth.”

Pranot Tirasai
Secretary to PTTEP Board of Directors
PTTEP’s first female employee



Beyond the Breakthrough is the Collaboration

PTTEP partners are not only from the business sector, but they are also from other sectors including the social, the community, and the environment. Because we believe that to grow continuously and sustainably, accountability on society must be at the heart of our work.

PTTEP is determined to uplift the quality of lives of the people, along with the preservation of the community and the environment not only in Thailand but in all the countries we operate. This is guided by four principle directions, which address the areas of basic needs of the community and society, education, environment, and the preservation of culture.

In 2018, this was demonstrated when PTTEP joined the search and rescue mission to rescue 13 young football players and their coach, also known as, the Wild Boar Academy, who were trapped in the Royal Cave - Khun Nam Nang Non, Chiang Rai Province. PTTEP brought its innovative technology to assist in the rescue efforts. Using its unmanned aircraft, commonly known as drone, which was a Multipurpose Plant Inspection Octocopter (MPIO) to explore the mountain summit to conduct an aerial map and analyze the conditions outside of the cave. In addition thermal cameras were used to detect

differences in surface temperatures to provide useful information for the rescue team on potential locations for the missing team.

More recently, during the Coronavirus 2019, or COVID-19 epidemic, which has had an impact on health, society, and the economy around the world, Thai people have risen to this challenge to cooperate and demonstrate their collective ability in various professions to deal with the epidemic in Thailand. This has witnessed cooperation across various agencies and organizations to apply their knowledge on technology to create innovations to alleviate the impact of the crisis.

PTTEP joined with our partners to develop equipment to prevent the spread of the virus, which would also safeguard medical personnel by reducing the risk of their infection from treating patients, as well as, serve as an effective diagnostic kit.

This collaboration used knowledge to innovate and allowed Thailand to be technologically self-sufficient, while at the same time demonstrated PTTEP's capacity to create potential benefits for the society.

Innovation for Life

PTTEP developed negative pressure patient transfer beds from a prototype originally from the Faculty of Medicine Vajira Hospital, Navamindradhiraj University, which was built to use at the hospital. Later on, PTTEP and its affiliate ARV, together with A.I. Technology Company Limited, a partner company, developed the prototype for production and delivery to hospitals across the country. This invention had to meet three important criteria which are: first, practical and safe, second, capable of being designed for mass-scale production in a very short period of time, and third, must be manufactured according to medical standards to prevent potential harm to patients, healthcare workers and other users.

For the negative pressure patient transfer bed, there is a negative pressure generator under the bed that is attached to aluminum tubing which ensures the air pressure remains negative. The air is circulated through a HEPA filter to kill the virus with UV-C radiation. This negative pressure patient transfer bed is, therefore, capable of negative pressure filtration, air purifying and sanitization systems at the same time. Which in turn ensures that the air released outwards is safe and reduces the risk of infection of medical personnel when transferring infected patients.

Additionally a mobile negative pressure box was also developed so that medical staff could diagnose infected patients more effectively and safely. Both these innovations were tested prior to actual use to ensure they met with the international standards, but with much lower production costs.





“I think PTTEP’s support through Navamindradhiraj University to the public health system is important. It should be mentioned in the story of Thailand’s COVID-19 response. We have many business partners, including PTTEP, who have provided assistance not because we are asked to do so but because we feel that it is our duty. Similarly for many organizations that have the resources and are strong enough, they also feel it is their duty to contribute in times of crisis. I admire PTTEP and many companies that have helped us through this crisis. It’s a decision to help in urgent situations, one of the most valuable in 35 years of PTTEP.”

Professor Dr. Surapon Nitikraipot
Chairman of the University Council of
Navamindradhiraj University



“The collaboration between the Faculty of Medicine Vajira Hospital and PTTEP and its partners is a new dimension in Thailand. It is a collaboration across professions between doctors and engineers which has never happened before, to further develop an innovation for hundreds of hospitals to have the negative pressure patient transfers. It’s an example of cooperation and mutual assistance without asking for anything in return, the encouragement, the unity in finding solutions, has resulted in an effective crisis management. The beginning of this collaboration could deliver benefits for the country in the future.”

Associate Professor Prayuth Sirivongs, M.D.
Dean of Faculty of Medicine Vajira Hospital of
Navamindradhiraj University



“We had ideas but not the know-how to produce in a mass scale in a short period of time and to distribute them throughout the country. So, we needed to find someone who has the same ideas and wanted to help. PTTEP is a strong organization with the potential to help make our ideas become reality. This is why we came together to and do this. More importantly, the first thing we agreed is that when there is a crisis in the country, we will be the ones who give first.”

Assistant Professor Anusang Chitsomkasem, M.D.

Associate Dean of Faculty of Medicine
Vajira Hospital of
Navamindradhiraj University



“When developing the negative pressure patient transfers with PTTEP, it was very challenging and difficult with limited time. The quality of the beds had to meet the highest standard, but we did it and we did it in just three days! PTTEP gave their full support as it was a national agenda that needed everyone to lend a hand.

I think the success came from our common goal to get the country through this crisis. In addition, the composition of the working group was important. In this crisis, I think it’s clear that the cooperation of many organizations was crucial in delivering good results. In addition, the good working atmosphere full of positivity, trust, honor, effective communication, and professionalism made coordination of the project very smooth and fun. Everyone contributed their own knowledge, believed in each other, worked hard together and supported each other. The results quickly showed that Thai people’s potential is second to none.”

Kulchoke Popattanachai

President and CEO of A.I. Technology Company Limited

Crisis Fighting Knowledge

PTTEP has always valued the importance of science and innovations to solve problems. Therefore, it supported Dr. Chayasith Uttamapinant, a professor at the Biomolecular Science and Engineering (BSE), Vidyasirimedhi Institute of Science and Technology (VISTEC) to research and develop COVID-19 diagnostic kits. It is the first faculty in the world to use CRISPR diagnostic technology or screening kits to screen patients, without the need for special equipment or tools, which means it can detect the virus in 30 - 45 minutes. The results are accurate and the process is not costly. The kits are used for initial tests at Siriraj Hospital.

Meanwhile, the research team has developed technology to improve the diagnostic kit to be more convenient and accurate. Moreover, it is in the process of developing the kit to be able to analyze multiple types of infections or genetic material at the same time. Also, the research has been conducted with the Broad Institute, Massachusetts Institute of Technology, and Harvard, to develop and improve on inspection kits to be just as accurate but also more convenient to use.





“PTTEP, as one of the founders of VISTEC, has a clear mission to create sustainable value for the public, as can be seen by its support towards the COVID-19 diagnostic kits research fund, to drive and develop the professionals of science and technology to be of sufficient quality with an adequate number of personnel to support the development of the country. Finally, if people in our country can develop self sufficiency to think and carry out this by ourselves, whether it is economic, industrial, or even social aspects. This will unlock significant and sustainable value.”

Professor Dr. Jumras Limtrakul

President of VISTEC:

Vidyasirimedhi Institute of Science and Technology

From We to World

PTTEP's commitment and responsibilities is not limited only in our operation sites, but we also foster sustainability for the world (From We to World).

Along with our dedication to create a sustainable business, there is a conscious recognition of a responsibility to the environment, to the development of society, and to all of our stakeholders.

In terms of the environment PTTEP has established operational strategies that address three critical environmental concerns which are: greenhouse gas reduction, efficient resource utilization and waste reduction, and the conservation and restoration of marine ecosystems to support all the lives that depend on it.

Reduce Global Warming

The sustainability of the business begins with environmentally friendly working practices, especially on global warming issues. PTTEP has focused on energy efficiency as a means to reduce greenhouse gas under three main themes, which are: flare/excess gas recovery and utilization, energy efficiency improvement, and the reduction of methane leakage, which is a greenhouse gas that has higher global warming properties than carbon dioxide.



Worthiness for Resources

The production processes of many industries generate waste, the petroleum industry is the same. PTTEP's management of waste disposal is based on the concepts of the circular economy, an example of this is the study of the utilization of rocks and soil waste from drill cuttings. PTTEP has joined forces with the Department of Rural Highways, the Department of Natural Fuels, and the Ministry of Energy, to work together on the feasibility of using debris from drilling as a material to build roads. The technology was initially tested in the area of Sirikit oil field and at a research and technology development center, at Wangchan Valley, Rayong Province.

Ocean for Life

Most of PTTEP's operational sites are offshore, therefore, the preservation and protection of the operation areas is done with great care. The protection and restoration of the marine natural resources and ecosystem have been crucially important to PTTEP. Through collaboration with our supporting partners, PTTEP has established artificial coral reefs, and preserved marine life species, so the sea will continue to be a sanctuary where all marine lives can continue to depend on.





“Thailand’s Rig to Reef project is the first of its kind in the world to create a new diving site, and if it is expanded continuously, it will increase fertility because there is a proven correlation between the complexity and volume of artificial corals and the effect they have on the amount of marine life, biodiversity, and furthermore benefits marine conservation, as it reduces congestion from tourists at natural reef dive locations, and reduces the detrimental effects of tourism on natural reefs. It also benefits tourism, as can be seen in the case of H.T.M.S. Prab in Chumphon Province, and H.T.M.S. Sattakut, Koh Tao, Surat Thani Province, which have become popular diving sites for tourists.”

Assistant Professor Thon Thamrongnawasawat, Ph.D.
Associate Dean for Special Affairs,
Department of Marine Science, Faculty of Fisheries of
Kasetsart University

Rig to Reef, Repay Nature for the Future of Thai Sea

The decommissioning of platforms and equipment used in petroleum business operation is a process in the E&P value chain, which is conducted after the end of the production period. It is an important process which requires comprehensive and standardized management concerning safety and responsibility for society and environment. Therefore, this has become the beginning of the idea to transform petroleum production jackets into artificial reefs or the Rig to Reef project. The production jackets and other structures that for years have been in close contact with marine life are converted to be used as artificial coral reefs.

Rig to Reef is a collaboration between the Petroleum Institute of Thailand Foundation, petroleum operators, educational institutions, and related government agencies, including the Department of Mineral Fuels, the Department of Fisheries, the Department of Marine and Coastal Resources, the Marine Department, and the Royal Thai Navy. The project must undergo environmental impact assessment and it must be approved by the Department of Mineral Fuels and related agencies. This is to ensure that it is the best option which truly benefits the society and the communities involved.

PTTEP plans to further study technology and the feasibility of various approaches to support future petroleum platform decommissioning. PTTEP established a decommissioning team in 2015 to provide a long-term strategy to maximize the value from the platform decommissioning process. A group of researchers were sent to study artificial coral reef on steel structures, at Koh Phangan, Surat Thani Province.

Although the Rig to Reef projects has been conducted in many countries around the world, this project is unique and distinct from other projects because it is not only for fishing or for artificial coral reef as many countries have aimed for, but it aims to create the largest man-made diving site in ASEAN.

Entrust the Fishermen to Take Care of Their Crabs

PTTEP has always valued the determination of the local community P.Sap-anan Traditional Fishermen Group to resolve the crab depopulation issue in Songkhla Lake, which had witnessed a steady decreased. The crab hatchery bank has worked on returning crabs to the sea to replenish the crab population. Through the group's efforts the crabs have a higher survival rate during the incubation process and the fisheries group have received a first-hand education on the biology of the crabs during each stage in its life.

Success gained from knowledge is invaluable. It's not just about the life of the crab population but it is also important to the lives of fishermen who will be able to maintain a sustainable way of living. And at the same time pass on a legacy of fertile natural resources to the next generation. With full support from PTTEP, the crab bank was developed into the full-scale Learning Center and Crab Hatchery Ban Hua Khao. The center buildings, training rooms, exhibition space, alongside the hatchery and crab nursery, were built, so that it could be a center of learning that combined the knowledge and wisdom of the original local crab hatchery. The center has helped to build a wide-spread network of knowledge, put smiles on local fishermen' faces, whose livelihoods are more sustainable.

As the population of crabs in the lake has increased, the fishermen have been able to extend the period they can catch crabs from late February to October, when previously it was only from June to early October.



Preserve the Sea Turtle

PTTEP's support for sea turtle conservation of the Royal Thai Navy's Sea Turtle Conservation Center in Sattahip District, Chon Buri Province addresses another important issue to maintaining the balance of the marine ecosystem. The center serves as a research and learning facility for sea turtles. It is the first sea turtle hospital in Thailand. PTTEP helped support the improvement of operating rooms, purchasing the necessary medical equipment, to enhance the center's capabilities in the treatment of sick turtles to be compatible with international standards.



The injured sea turtle will be treated at the sea turtle hospital, the Royal Thai Navy's Sea Turtle Conservation Center, until they are healthy and can be released back to the sea. The center consists of a modern and fully integrated operating room. In addition to providing medical treatment to turtles, it is also a place for study, research, medical treatment information storage, and follow-up care of turtles.



Royal Battleship to Guard Thai Sea

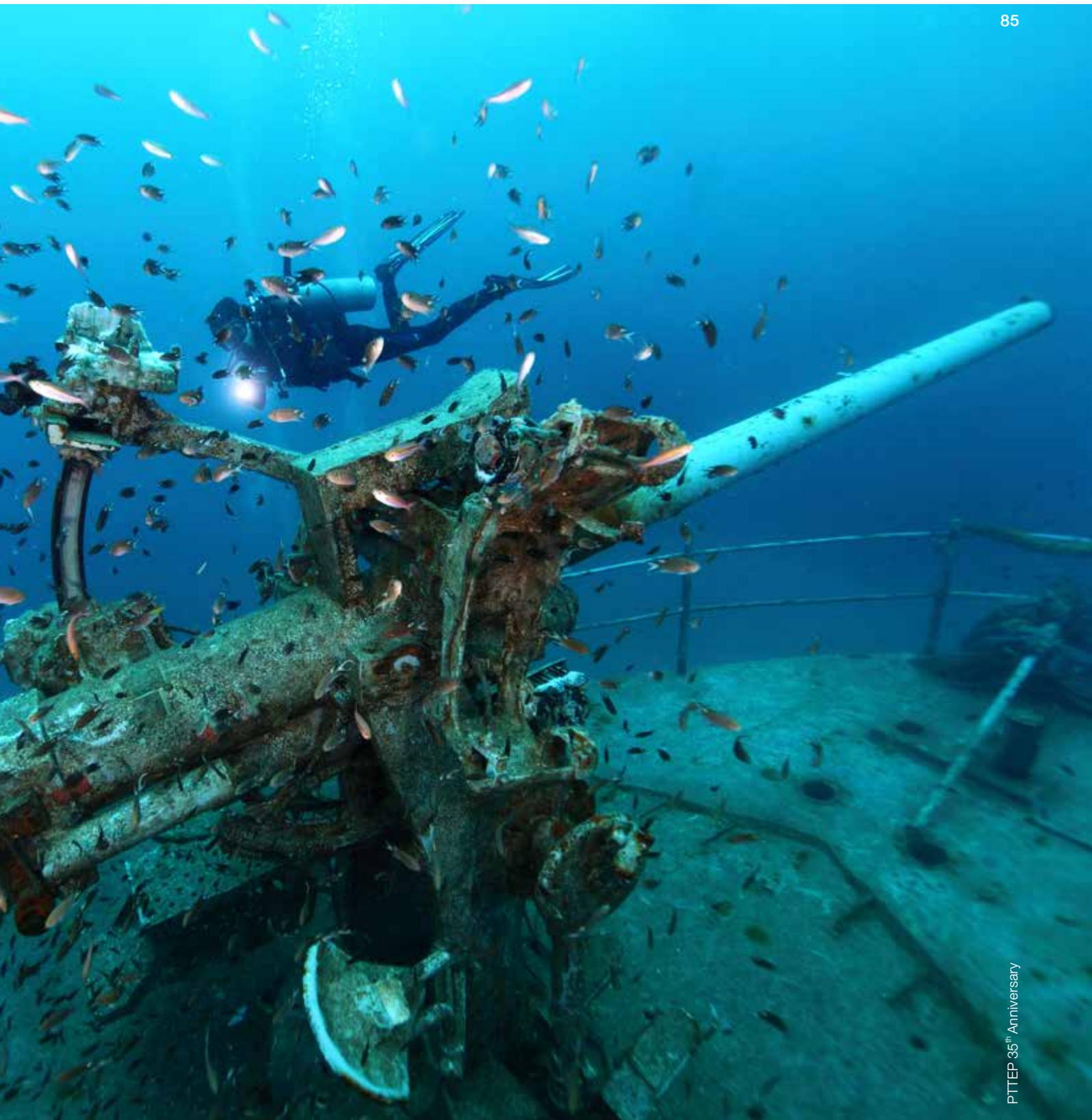
In response to the coral bleaching, which affects not only the coral reefs but the countless marine animals that rely on coral as a nursery and refuge, as well as, humans who rely on the sea for livelihoods, man-made diving sites have been created to allow nature time to rejuvenate and restore. At the same time, they also enable the local community to continue to make a living from tourism.

PTTEP, in collaboration with various parties, supported the study and use of the former royal battleship to create artificial reefs in Chumphon and Surat Thani Provinces. The **“H.T.M.S. Underwater Learning Site”** project was initiated with the placing of H.T.M.S. Prab on the seabed near Koh Ngam Noi, and H.T.M.S. Sattakut on the seabed near Koh Tao, to become new diving sites.

After years of operations, a study of the aquatic marine life was conducted and found that more than 40 species of fish were added, the following year another study found more than 60 species. Whale sharks have been spotted near H.T.M.S. Prab while the number of sessile animals increased. H.T.M.S. Prab and H.T.M.S. Sattakut have become popular human-made diving sites and frequently visited by tourists from around the world.

As a petroleum exploration and production company building energy security and driving economic growth, PTTEP has brought potential, readiness, consciousness, and responsibility to care for people both inside and outside the organization as well as the natural environment, and we remain determined to create value and sustainable mutual growth among all stakeholders.





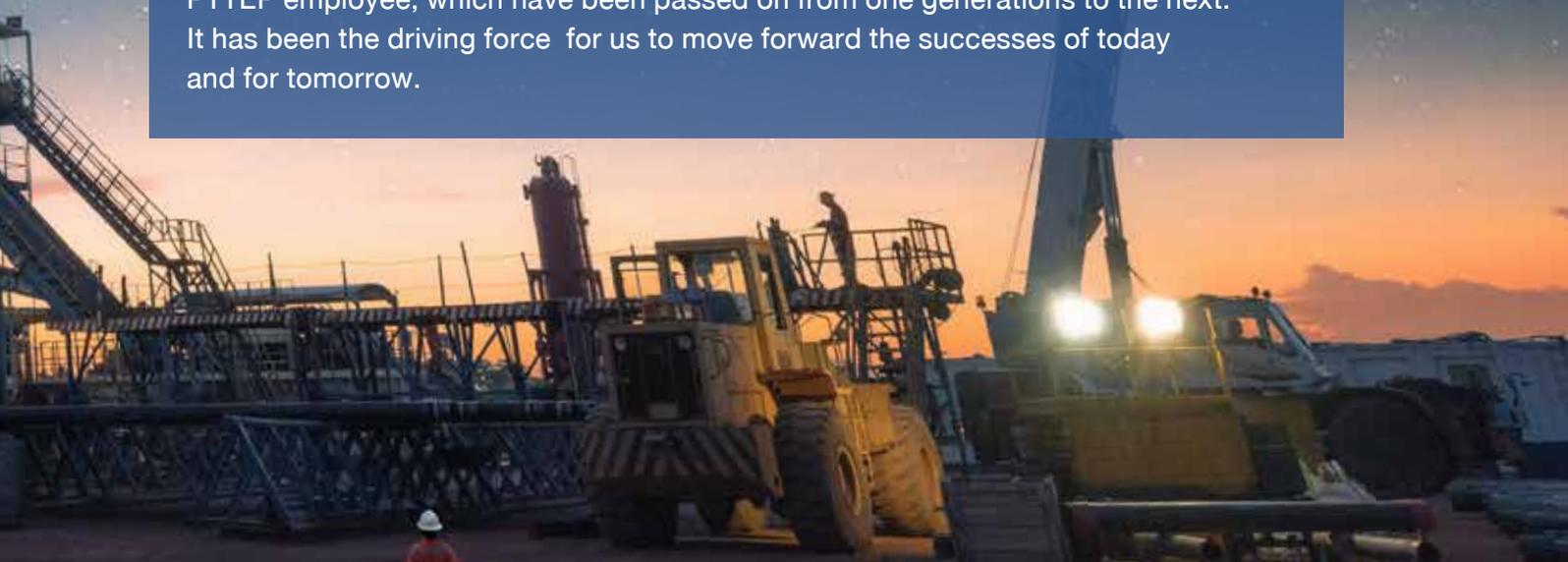
Proof



Achievement

PTTEP is trusted by our stakeholders to conduct our business in compliance with good corporate governance and business ethics, with a conscious responsibility to the communities and environment to ensure sustainable development, which is reflected by the many national and international awards and recognition which is testament of our long-term dedication.

Confidence and dedication are part of the DNA embedded in the spirit of every PTTEP employee, which have been passed on from one generations to the next. It has been the driving force for us to move forward the successes of today and for tomorrow.



Committing to the Sustainability Journey

For the past 35 years of our existence, PTTEP has gained trust from all stakeholders. We have been recognized internationally for conducting business in accordance with a sustainable development framework across all dimensions. We have maintained a balance between business performance, environmental management, corporate social responsibility, and adherence to good corporate governance. To this end, PTTEP has received awards from various organizations both domestically and internationally.

The sustainable development of the organization is our ultimate goal and the awards we have received along this journey are evidence that we are on the right path and is something we are proud of and regard as further encouragement to redouble our efforts and dedication forever.





MEMBER OF

**Dow Jones
Sustainability Indices**

In collaboration with  **SAM**
a RobecoSAM brand

Dow Jones Sustainability Indices (DJSI)

In recognition of conducting business that is committed to creating sustainable value for all stakeholders, in 2019, PTTEP has been selected as a member of the Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for six consecutive years. The company was also awarded the Industry Leader in this category for the second time.

Dow Jones Sustainability Indices (DJSI) are internationally recognized indices that evaluate the sustainability performance of the 2,500 leading companies worldwide. Companies are evaluated on various economic, environmental and social criteria. The indices serve as a primary benchmark for investors who integrate sustainability considerations into their investment portfolios.

FTSE4Good Index Series

PTTEP has been continuously selected as a member of the FTSE4Good Index Series. The FTSE4Good Index Series is a global scorecard that evaluates the performance of companies on environmental, social, and good governance, practices.

SET Awards

The SET awards from The Stock Exchange of Thailand (SET), in cooperation with Money and Banking Magazine, are presented to listed companies, securities companies and asset management companies distinguished in various aspects such as performance and qualitative practices, and outstanding environmental and social responsibility with good corporate governance practices. In 2019, PTTEP received 2 awards, which were Best Sustainability Awards and Outstanding Investor Relations Awards in the category for listed companies with market capitalization of over Baht 100 billion.

Moreover, SET honored PTTEP for the fourth time as one of the Thailand Sustainability Investment (THSI) in 2019.





“Every award PTTEP received is a reflection and recognition of PTTEP’s management’s commitment to conducting business in accordance with good corporate governance, social responsibility, and environment, with considerations to all stakeholders. PTTEP has clearly identified key materiality sustainability issues in line with key business characteristics. More importantly, when setting the company’ vision and strategies for implementation, PTTEP has a clear process and guidelines to meet the goals and to respond to social responsibility and environmental considerations.”

Yuth Vorachattarn

Chairman of Sustainability Excellence Awards Committee
Special Expert on Corporate Governance and Sustainability of
The Stock Exchange of Thailand



Certificate of ESG100 Company

PTTEP has been selected as one of 100 listed companies that stand out for sustainable business operations with good operating results and outstanding operations in terms of environment, society, and good governance (ESG) in 2015 and 2018.

ESG100 Company certification is awarded to companies listed on The Stock Exchange of Thailand with excellent practises in environmental, social and corporate governance. It was organized by Thaipat Institute

The NACC Integrity Award

Being recognized for its ethical practices, transparency, as well as corporate social responsibility, in 2020, PTTEP was awarded the NACC Integrity Award from The National Anti-Corruption Commission (NACC) for the third time.

The NACC Integrity Award is an award given to organizations recognized for their ethical practices, transparency, anti-corruption as well as their support for human rights and compliance with ethical practices in line with international standards.



“How to convince people that the organization can operate sustainably? I think there are additional elements outside of just profitability. First, transparency and effective governance is required. Second, risk management of the organization, mitigating risks related to the environment, social, and governance, or ESG, becomes increasingly important. And, third, organizations should pay attention to stakeholders throughout the supply chain. With these three elements, organizations will gain trust from their investors, partners, customers, or people in society which will lead to sustainability.

I think there are a number of organizations that are profitable, but only few organizations are well managed with risk management, stakeholder management, continued information disclosure and transparency, which I see in PTTEP. They have done consistently well.”

Dr. Pakorn Peetathawatchai
President of The Stock Exchange of Thailand

Synergy





Sustainability



Throughout PTTEP’s 35-year journey, our dedication to excellence has based on our core beliefs, that to succeed in petroleum exploration and growth in our business, we must never stop improving ourselves as we strive to create trust among all of our stakeholders. Today, PTTEP is able to stand firmly on the international stage. We have achieved a competitive edge, proving ourselves as a company with performance excellence, transparent corporate governance, business ethics, and sustainable business operations with a consciousness towards social and environmental responsibilities.

In an ever-changing world, businesses increasingly need to support each other. PTTEP’s vision “Energy Partner of Choice” reflects this focus on building partnerships, to keep pace, and take the steps to meet the challenges that arise. To build knowledge, develop technology, change the way of working and adjust operational strategies, to directly implement across operating areas in many countries around the world. To ensure consistent and continual success and to create sustainable value.







“With our vision as the Energy Partner of Choice, PTTEP aims to deliver growth and create long-term value to all stakeholders. We believe in the power of collaboration which will lead to stability as well as new opportunities in the E&P value chain such as gas turbine power plants (Gas-to-Power) and LNG related business.

Meanwhile, to meet the global challenges from rapid technological advancements, we capture business opportunities to commercialize technological innovation projects including Robotics and AI, which our subsidiary company ARV is working closely with its partners. ARV services were initially built upon our specialized technologies in E&P activities. But in the near future the expertise will also become available to support other industries including agricultural and medical service.

With the solid strategy that outlines our direction, combining with our dedication, I believe these will create long-term growth and sustainability for both PTTEP and all our stakeholders.”

Phongsthorn Thavisin

President and Chief Executive Officer of PTTEP



From now into the future, PTTEP remains committed to our journey in exploring, driving development and strengthening energy security. We are ready to face any challenge and ready to turn them into purposes to build a sustainable future.

We will strive towards our goal to expand our operations into petroleum-prolific areas and maintain our cost advantage, by utilizing our capabilities and synergies, to achieve the best outcome. Above all is that our path ahead will be led by the “Energy Partner of Choice” vision which affirms that the power of partnership is the way forward to a sustainable energy future.



Scan to watch
35-year journey of
PTTEP commercial
#ReachOutForTheSky



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From 1985 until today, it has been a 35-year journey of advances and achievements for PTTEP. From the very first petroleum exploration and production project to more than 40 projects in 15 countries across the globe. Starting from 33 employees to more than 4,500 people today. From the beginnings as a learner, to today an operator in petroleum exploration and production, ready, able and willing to transfer this knowledge for the benefit of all. Every milestone is paved from the belief. Belief in the capabilities of our people. Belief in the possibilities of the impossible. Belief in the dedication. Belief in the power of collaboration derived from our vision “Energy Partner of Choice”, which will enable PTTEP to overcome current and future challenges. Limitless potential driven by our cutting-edge technology, innovation, and a pioneering spirit handed down from generation to generation, we will be the partner of choice, creating long-term sustainable growth and shared values for all.