



PTTEP

2024 TCFD Report

July 2024

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1. INTRODUCTION

1.1 Overview of PTTEP

PTT Exploration and Production Public Company Limited (“PTTEP”), a Thai national petroleum exploration and production organization, is a publicly listed company on the Stock Exchange of Thailand, and a subsidiary of PTT Public Company Limited, Thailand’s national petroleum company. PTTEP’s mission is to operate globally to provide reliable energy supply and sustainable value to all stakeholders. We set our vision to be an energy partner of choice through competitive performance and innovation for long-term value creations.

Committed to playing our part in contributing to sustainable development, PTTEP strives to provide energy security through continuous growth and competitive returns while lowering impacts on the environment and generating value for society through responsible operations in response to the stakeholder expectations.

1.2 Introduction to TCFD

The Task Force on Climate-related Financial Disclosures or TCFD, developed by the Financial Stability Board with support from industry experts from various organizations, including large banks, insurance companies, asset managers, pension funds, large non-financial companies, accounting and consulting firms, and credit rating agencies, provides a framework for organizations to disclose climate-related financial information. It aims to improve the transparency and comparability of climate-related disclosures, enabling stakeholders to make informed decisions, for example regarding investment in and financing to the reporting company. The standard emphasizes transparency on climate-related governance, strategy, risk management, and metrics and targets.

As of November 2023 TCFD has been replaced by IFRS S2 Climate-Related Disclosures Standard (International Financial Reporting Standards). There is currently a period of transition in Thailand, where companies may choose to align with IFRS S2 or use TCFD. At the time this report was released, this standard is currently undergoing translation into Thai under TFRS S2 (Thai Financial Reporting Standards) expected to be implemented in Thailand over the next few years. PTTEP has chosen TCFD as a reporting standard to align with the Securities and Exchange Commission (SEC) of Thailand reporting requirements.

1.3 About this Report

This report is an update of our previous year’s TCFD report. This report covers the calendar year 2023. The report content index is available [here](#), and covers the location of our reported indicators. We plan to continually improve our climate-related disclosures over time.

2. GOVERNANCE

PTTEP's Climate Change Governance Structure

2.1 Climate Change Governance

Strong governance structures and clear accountability enable PTTEP to deliver our commitment towards sustainability and climate change goals. The Board of Directors (BoD) is responsible for approving the Company's sustainability strategy (including our decarbonize strategy), framework and target under the advisory of the **Corporate Governance and Sustainability Committee (CGSC)**.

Members of the CGSC must possess qualifications based on numbers of criteria considering their commitment and skills adequately as leaders to oversee sustainability-related risks and opportunities. The CGSC, a sub-committee responsible for monitoring and reviewing the performance and effectiveness of the sustainability roadmap, ensures that the Company is progressing towards achieving our sustainability goals. To align the Company towards ambitious sustainability goals, including on climate matters, the board implements PTTEP's climate change management procedures, internalizes external drivers impacting the Company's performance, and incorporating climate-related risks and opportunities into our strategic decision-making process. For further details on the CGSC and Risk Management Committee (RMC), please visit our [website](#).

To ensure accountability for sustainability and climate-related actions, PTTEP has integrated environmental, social, and governance (ESG) and climate-related key performance indicators (KPIs) into our Corporate KPI under the strategies of "Decarbonize" (10% weight) and "Diversify" (25% weight) (see page 29). The Corporate KPI is cascaded to the CEO, executives, division/department levels, and all employees, with year-end performance influencing bonus allocations. For example, the CEO has a KPI called "Develop New Business for Energy Transition", which involves the execution of investment in new business and has a weighting of 25% of overall KPIs linked to the Corporate KPI under the "Diversify" strategy. See more about PTTEP's Energy Transition Business on page 23.

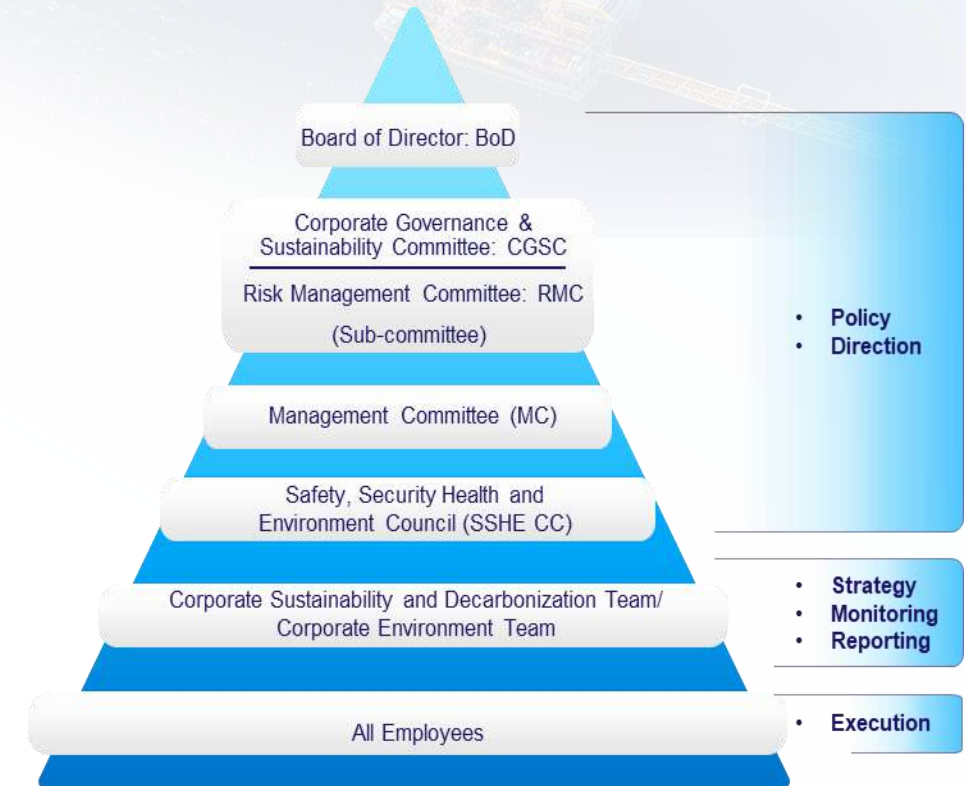


Figure 1 : PTTEP Climate Change Governance Roles and Responsibilities

2. GOVERNANCE

PTTEP's Climate Change Governance Roles & Responsibilities

Table 1: PTTEP's Climate Change Governance Roles & Responsibilities

Role	Responsibility	Meeting Frequency
Board of Directors: BoD	<ul style="list-style-type: none">• Approve the corporate policies and strategies (including our climate change strategy) including frameworks and targets on an annual basis.• Oversee the climate-related strategy, relevant policies, and action plans.	Monthly
<u>Corporate Governance and Sustainability Committee:</u> CGSC	<ul style="list-style-type: none">• Oversee the corporate sustainability strategy and framework including climate-related issues of PTTEP.• Oversee the corporate sustainability reporting processes including risk management processes and use of internal and external audit.• Provide directions and monitor climate-related implementation including roadmap and its performance.	At least 4 times per year
<u>Risk Management Committee:</u> RMC	<ul style="list-style-type: none">• Regularly review enterprise risks including climate-related risks.	Monthly
Management Committee: MC (Chaired by CEO)	<ul style="list-style-type: none">• Monitor the achievement of sustainability performance including climate-related impacts, risks, and opportunities and support underperforming gap closing with recommendations.• Review sustainability material issues (including climate-related issues and policies) on the strategies, business directions, investment plans, budget, and human resources of PTTEP and our subsidiaries.• Review and approve the Company's sustainability reports, ensuring that they accurately and comprehensively reflect the Company's sustainability performance, commitments, and future goals.• Ensure adequate resource allocation (funding, manpower, etc.) for the effective implementation of the corporate strategy.	Weekly

2. GOVERNANCE

PTTEP's Climate Change Governance Roles & Responsibilities

Table 1: PTTEP's Climate Change Governance Roles & Responsibilities

Role	Responsibility	Meeting Frequency
Safety, Security Health and Environment Council: SSHE CC (Chaired by CEO)	<ul style="list-style-type: none">• Oversee the management of safety, security, health and environment including climate-related issues of PTTEP under the umbrella of corporate and sustainability strategies.• Review and approve the safety, security, health, and environment-related section of PTTEP sustainability reports, ensuring accurate and transparent disclosure of performance data, risks, and mitigation strategies.• Conduct/manage climate-related impacts, risks and opportunities, and targets, to monitor the performance and effectiveness of the sustainability and environment roadmaps.	Quarterly
Corporate Sustainability and Decarbonization Team/ Corporate Environment Team (Cooperate with Corporate Planning Team)	<ul style="list-style-type: none">• Develop a strategic direction for climate-related issues under “Decarbonize” strategy supervised by the Decarbonization Section Manager.• Coordinate and deploy employees who have an important role in implementation and compliance to achieve sustainability and decarbonization targets.• Regularly monitor the result and effectiveness of the sustainability and decarbonization roadmap execution, and benchmark internally and externally.• Report the results to the Management Committee and the Corporate Governance and Sustainability Committee on a regular basis.	Regularly
All Employees	<ul style="list-style-type: none">• Comply with PTTEP's sustainability and decarbonization requirements.• Support Sustainability and “Decarbonize” strategy implementation related to his/her area of responsibility.	Regularly

3. STRATEGY

Climate-Related Risk and Opportunity Assessment

Background:

In 2023, PTTEP has conducted climate-related scenario analysis and a physical and transition risk and opportunity analysis according to the Task Force on Climate-related Financial Disclosures (TCFD) framework. This analysis is integrated into our climate change management, as governed by PTTEP's climate change governance. This scenario analysis is reviewed by the CGSC and further developed into a climate strategy by the Corporate Sustainability and Decarbonization team and Corporate Environment team.

Scope:

PTTEP assessed risks in a context-specific manner to achieve timely improvement of climate strategy across all operation assets.

As our business mainly focuses on sales of product to customer, our scenario analysis therefore also considers impacts of reduced sales from our customers (or downstream impacts). We do not have material impacts from our suppliers (or upstream impacts). We consider that transition risk impacts from suppliers is minimal.

Levels of analysis:

For the scenario analysis, physical risks are assessed by site, while transition risks are assessed by country where we operate our assets, namely Thailand, Malaysia, and Myanmar.

Time horizons:

The assessment covers medium-term risks (2026-2035) and long-term risks (2036-2050). Short-term risks are generally not effectively assessed by scenario analysis. However, PTTEP continuously monitors these risks and has not identified any potential impact in the short term.



3. STRATEGY

Scenario Analysis of Climate-related Risks and Opportunities

Scenario analysis is a process for assessing potential future impacts (both positive and negative) to companies in various defined scenarios, each comprising a set of outcomes. Climate-related scenario analysis looks specifically at climate-related impacts and is an important part of strategy development, as it informs PTTEP of potential future changes that could have significant positive and negative financial impacts to the Company. 2050 is an important milestone as the global community needs to achieve Net Zero by 2050 in order to limit temperature increase to within the Paris Agreement's target of 1.5°C, therefore 2050 is used as the longest timeframe for scenario analysis for both transition and physical risks. Since it is impossible to precisely predict the conditions in 2050, the purpose of scenario analysis is not to determine specific impacts, but the possible range of impacts to companies and the strategic implications for companies. In the climate-related risk assessment, we assess climate-related impacts by including worst-case scenarios to gain insight into potential challenges and gauge the readiness of our mitigation and adaptation measures.

Physical Risks

Physical risks, related to direct impacts, are informed by the Representative Concentration Pathways (RCPs) developed as part of the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC). Scenario analysis based on RCPs helps in understanding the range of outcomes regarding the physical impacts to the environment over a range of global temperature increases compared to pre-industrial levels. This then helps informing businesses such as PTTEP on the potential physical impacts (such as drought and flooding) that may occur if global average temperatures are increased to above 2°C. It supports informed decision-making by providing insights into the potential risks, opportunities, and trade-offs under different scenarios.

Transition Risks

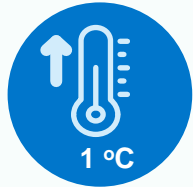
Transition risks in our risk assessment refer to scenarios from the International Energy Agency (IEA) and other sources e.g. IPCC. The IEA mainly looks at future trends of energy production, demand and consumption, and from these any related impact to global GHG emissions. In lower carbon scenarios, such as Sustainable Development Scenario (SDS), renewable energy transition occurs faster, and use of higher polluting fuels such as coal are phased out more quickly. The Stated Policies Scenario (SPS) looks at a scenario where the world continues as per national and international policies currently in place. In this scenario, most of the world's energy consumption remains fossil-based, with fewer actions towards renewable energy. However, IPCC looks at a wide range of possible carbon prices based on policy measures, available technologies, and model methodologies.

3. STRATEGY

Assessment Scenarios

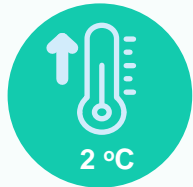
Figure 2 : Climate risk assessment scenarios

Physical Risk Scenarios



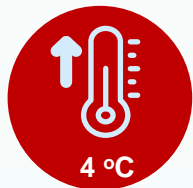
RCP 2.6

An 'aggressive' mitigation scenario that may lead to temperature increase of approximately 1°C in 2100.



RCP 4.5

A 'strong' mitigation scenario that may lead to temperature increase of approximately 2°C in 2100.



RCP 8.5

A business-as-usual (BaU) scenario with a continuation of the current path of increasing GHG concentrations that may lead to temperature increase of approximately 4°C in 2100.

Transition Risk Scenarios



IPCC

Intergovernmental Panel on Climate Change

A wide range of possible carbon prices based on policy measures, available technologies, and model methodologies.



SDS

International Energy Agency (IEA) Sustainable Development Scenario

Major transformation of the global energy system from oil & gas to renewable energy. This scenario fully aligned with the original Paris Agreement estimating temperature increase of approximately 2°C in 2100.



SPS

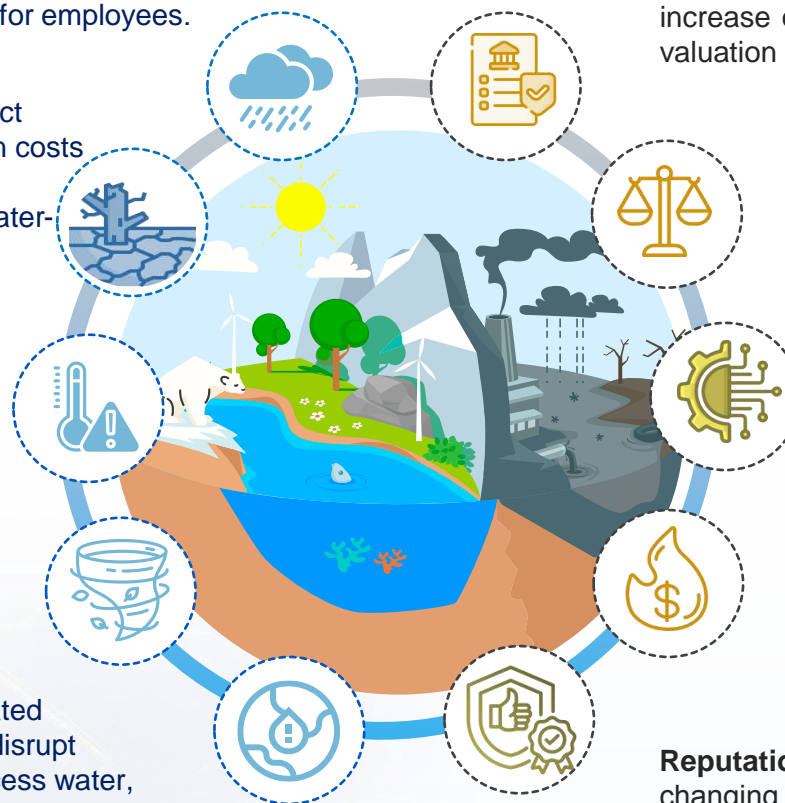
IEA Stated Policies Scenario

Reflects the impacts of existing policy frameworks and today's announced policy intentions and shifts from oil to natural gas and (to a lesser extent) renewable energy leading to greater than 2°C temperature increase in 2100.

3. STRATEGY

Climate Risk Categories and Key Impacts

Scenario	Physical Risk	Transition Risk	Scenario
RCP 2.6 RCP 4.5 RCP 8.5	<p>Heavy precipitation: Increased precipitation causes damage to assets and can be a health risk for employees. Impacts caused mainly through flooding.</p>	<p>Policy: Implementation of carbon pricing could significantly increase operation costs, which will impact market demand and valuation of assets.</p>	SDS IPCC
RCP 2.6 RCP 4.5 RCP 8.5	<p>Drought: Induced water scarcity may restrict use, raise water prices, increase production costs and cause higher frequency of bushfires. Mitigation actions include investments in water-saving equipment.</p>	<p>Legal: The emergence of a new type of jurisprudence in both national and international law courts could lead to legal action against PTTEP related to climate-related impacts.</p>	Not Scenario Specific
RCP 2.6 RCP 4.5 RCP 8.5	<p>Heatwaves: Impacts labor productivity and equipment efficiency, affecting operation cost by increasing the need for additional cooling.</p>	<p>Technology: Technological innovations for a low-carbon, energy-efficient economy can impact competitiveness, production and distribution costs, and demand for PTTEP products and services.</p>	SDS SPS
RCP 2.6 RCP 4.5 RCP 8.5	<p>Tropical cyclones: Damages or destroys facilities, impacting critical infrastructure, such as transportation and powerlines.</p>	<p>Market: Carbon budgets for each operating country may limit fossil fuel consumption. PTTEP production may exceed the allocated carbon budget of countries where PTTEP products are sold and may pose a risk of stranded assets.</p>	SDS SPS
RCP 4.5 RCP 8.5	<p>Other Water-related risk: Other water related impacts could cause water shortages can disrupt production, alter water pricing, rights to access water, and harm reputation through poor communication.</p>	<p>Reputation: Customers or society in general may have changing perceptions regarding whether PTTEP's support for the transition to a low-carbon economy is sufficient or not. This perception could lead to negative media disclosures, leading to impacts to PTTEP's stock prices or sales.</p>	Not Scenario Specific



3. STRATEGY

Physical Risk Analysis

Physical risks are risks arising from the impacts of a changing climate on corporations due to changes in the probability and intensity of changing climatic patterns, both those with chronic effects (e.g. gradual increase in average temperature and sea level) as well as those with acute effects (e.g. extreme weather events such as flooding, cyclones, and water stress). Specifically, in the assessment of physical risks, up to three scenarios are applied. These correspond to <2°C, +2°C and +4°C warming temperature outcomes and are guided by the Intergovernmental Panel on Climate Change (IPCC)'s scenarios from the AR5 report: a strong sustainability transition scenario (RCP 2.6), a “middle of the road” scenario (RCP 4.5) and a high physical impact scenario (RCP 8.5).

Then, we analyzed how these changes could financially impact PTTEP across our value chain, including PTTEP operations, upstream activities, and downstream activities. Overall, the current risks imposing by heatwave, tropical cyclone and other extreme weather to value chain are at medium-low to medium risks. Lower productivity and business interruption are common potential impacts from these hazards. The risks and impacts of these extreme weather events are expected to stay the same or increase its magnitude if the world approaches the RCP 4.5 or 8.5 scenarios.

For water-related risks, PTTEP has analyzed the risks thoroughly and summarizes that there is no indication that lack of water leads to a financial risk, based on historical data.




Table 2 provides a summary of highest risk level of each physical risk category. Ratings were assigned according to PTTEP's enterprise risk criteria. Substantive physical risks, defined as the physical risks with highest financial impact, are heat wave and tropical cyclones. More details about the impacts are described in Table 3.



3. STRATEGY

Physical Risk Analysis Results

Table 2: Summary of highest residual risk level of each physical risk category


Impact	Assets/Projects	Scenario	Country	Risk Level	High	Medium	Low
				Medium-Term (2026-2035)		Long-Term (2036-2050)	
<div>Heatwave</div> <div></div>	Arthit, G1/61, G2/61 – North, S1, Sinphuhorm	RCP 8.5	Thailand	Substantive Impact			
	G2/61 – South						
	Zawtika	RCP 8.5	Myanmar				
	Malaysia	RCP 8.5	Malaysia				
<div>Heavy Precipitation</div> <div></div>	G1/61	RCP 8.5	Thailand	End of Concession			
	PTTEP 1						
	Yadana	RCP 8.5	Myanmar				
	Malaysia	RCP 8.5	Malaysia				
<div>Tropical Cyclones</div> <div></div>	Arthit, G2/61 – North, G2/61 – South	RCP 4.5	Thailand	Substantive Impact		No data for likelihood score	
	G1/61	RCP 8.5					
	Malaysia	RCP 4.5	Malaysia				
Drought	Zawtika	N/A					
Water	Sinphuhorm	RCP 8.5	Thailand				

*Denote highest risk score of each sub-category of impact

3. STRATEGY

Substantive Physical Risk Impact (1)


Table 3: Summary of substantive physical risk impacts and mitigation measures from scenario analysis

Identified Risk	Scenario	Time Horizons	Example of Inherent Risk Implication	Mitigation Plan / Financial Impacts on PTTEP Business	Likelihood
Heatwave 	RCP 8.5	Medium-Term (2026 – 2035)	<ul style="list-style-type: none"> For PTTEP's Thailand offshore asset (G2/61 South), changes in the frequency and intensity of heatwaves will reduce workers' ability to work. At moderate intensity work and temperatures of 33-34°C, a worker's capacity can decrease by 50%. Outdoor work in the oil and gas industry is physically demanding and requires protective clothing and gear. During periods of excessive heat, the time required for outdoor operations and maintenance work may increase, resulting in higher maintenance costs. Financial implication <ul style="list-style-type: none"> Increased operating cost = 7 million USD 	<ul style="list-style-type: none"> Reduce working hours, postpone maintenance, appropriate clothing, mandatory drinking breaks, and smartwatches for heat stroke detection through body temperature monitoring. Identify critical equipment, monitor their performance, assess remaining lifespan and any system upgrades, and consider revising specifications for improved resilience in high temperatures. Financial implication <ul style="list-style-type: none"> Increased operating cost = 2 million USD 	Likely

3. STRATEGY

Substantive Physical Risk Impact (2)

Table 3: Summary of substantive physical risk impacts and mitigation measures from scenario analysis

Identified Risk	Scenario	Time Horizons	Example of Inherent Risk Implication	Mitigation Plan / Financial Impacts on PTTEP Business	Likelihood
Tropical Cyclones 	RCP 8.5	Medium-Term (2026 – 2035)	<ul style="list-style-type: none">• Tropical cyclones have caused production interruptions for these assets in the past.• During production interruptions, the flow rate of oil and gas production decreases by an average of 50%.• The average length of a production interruption is 5 days.• It is projected that the frequency of tropical cyclones will increase for the Malaysia and Thailand offshore assets (where G1/61 poses a substantive impact).• This poses a growing financial risk for PTTEP.• Financial implication<ul style="list-style-type: none">○ Decreased revenue = 18 million USD	<ul style="list-style-type: none">• Implement monitoring for early detection and identify vulnerable infrastructure areas.• Explore measures to prevent or minimize spill magnitude and mitigation options.• Develop/update a strategy and protocol for managing storage tank capacity and update the spill prevention, control, and countermeasure plan accordingly.• Financial implication<ul style="list-style-type: none">○ Increasing operating cost = 10 million USD	Unlikely

3. STRATEGY

Transition Risk Analysis

Transition risks are those risks resulting from a transition to a low-carbon economic development pathway that would maintain temperature increase within the 2°C limit. Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes. For the oil and gas exploration sector, the main impacts are generally related to the greenhouse gas emissions from operations, use of fuel products, and the change in demand for products driven by the low carbon economic transition.

We followed a structured approach to examine potential changes at the country level. Table 4 provides a summary of highest risk level of each transition risk category. The assessment has identified policy, technology and reputation as transition risks with potential high-impact.

Although PTTEP has been voluntarily and actively implementing Decarbonize Strategy to reduce our GHG emissions with the Net Zero target in 2050, policy risk could lead to liabilities for the company due to the resulting carbon pricing.

Conversely, the loss of revenue and market value of PTTEP resulting from technology risk and reputation risk can be significantly mitigated by our Decarbonize Strategy and Diversification Strategy. Specifically, the risk of revenue loss is primarily safeguarded by take-or-pay provisions in our gas sales agreements and is limited in duration due to the finite field life of natural resource projects.

Therefore, PTTEP considers only policy risk (carbon pricing) as the only substantive transition risk (defined as the transition risk with potentially highest financial impact) in our assessment. More details about the impacts are described Table 5.



3. STRATEGY

Transition Risk Analysis

Table 4: Summary of highest residual risk level of each transition risk category


Impact	Scenario	Country	Risk Level* <div>HighMediumLow</div>	
			Medium-Term (2026-2035)	Long-Term (2036-2050)
Policy	IEA SDS	Thailand	Substantive Impact	
		Myanmar		
		Malaysia		
Legal/ litigation	Not scenario-specific	Thailand		
		Myanmar		
		Malaysia		
Technology	IEA SDS	Thailand		
		Myanmar		
		Malaysia		
Market	IEA SDS	Thailand		
		Myanmar		
		Malaysia		
Reputation	Not scenario-specific	Thailand		
		Myanmar		
		Malaysia		

*Denote highest risk score of each sub-risk categories

3. STRATEGY

Transition Risk Impact (Substantive)

Table 5: Summary of substantive transition risk impacts and mitigation measures from scenario analysis

Identified Risk	Scenario	Time Horizons	Inherent Risk Implication / Financial Impacts on PTTEP Business	Mitigation Plan / Financial Impacts on PTTEP Business	Likelihood
 Carbon Pricing	IEA SDS	Medium-Term (2026 – 2035)	<ul style="list-style-type: none"> Significant impacts on PTTEP's operations globally from carbon taxes and/or cap and trade mechanisms implementation. However, Malaysia operations pose the highest potential impact from carbon price due to their major emission portion. Affect on PTTEP's future requirements for reducing internal emissions and may influence the company's strategy to adopt low carbon energy technologies. Expects that carbon pricing will become stricter. Financial implication <ul style="list-style-type: none"> Carbon tax/ ETS = 352 million USD 	<ul style="list-style-type: none"> Reduce emissions through adoption of an Internal Carbon Price. Further emission reduction projects within PTTEP. Financial implication <ul style="list-style-type: none"> Cost to further reduce emissions estimated to be no more than 352 million USD (otherwise PTTEP would pay the Carbon Tax/ETS) 	Unlikely

3. STRATEGY

Significant Areas of Uncertainties in Assessment of Climate Resilience

Our scenario analysis is run based on sets of assumptions derived from sources such as IEA for transition risks and IPCC for physical risks. Forward-looking statements, such as those covered under scenarios, are subject to adjustments based on future information.

PTTEP acknowledges three main areas of uncertainty regarding our scenario analysis assessment:

- **Model uncertainty:** Models are a representation and approximation of real climate conditions, due to practical reasons, there are certain processes that are not incorporated into the climate model.
- **Scenario uncertainty:** PTTEP has selected the most appropriate scenarios for our business, however we acknowledge the existence of other scenarios, the differences between our selected scenarios and other scenarios and the inherent limitations of the scenarios we have selected.
- **Internal uncertainty:** This uncertainty is generated by climate itself, as it is a complex and non-linear system, leading to unpredictability of outcomes that cannot be fully resolved, even by the most comprehensive models.

3. STRATEGY

PTTEP's Decarbonize Strategy

PTTEP has utilized the results of climate-related scenario analysis to inform our business strategy. Our Sustainability Strategy and Long-term target is informed by PTTEP Strategic Pillars as

- ❑ Drive Value
- ❑ Decarbonize
- ❑ Diversify



Findings from our climate-related scenario analysis have shown that there are significant long-term risks to fossil fuel related businesses and significant opportunities related to renewable energy and decarbonization, and this has informed our “**Decarbonize**” and “**Diversify**” Strategic Pillars below. These topics focus on decarbonizing our existing businesses and developing new businesses that facilitates the transition to a low-carbon economy. Full details on our Sustainability Strategy and Long-term Strategy are on our website [here](#).

3. STRATEGY

PTTEP's Decarbonize Strategy

PTTEP aims to play a role in addressing climate change as an urgent national and global issue, striving to create a better world for future generations by reducing greenhouse gas emissions from our operational activities. Previously, under our EP Net Zero 2050 strategy, PTTEP has set our target to reduce the Scope 1 and 2 GHG intensity (tCO₂e/thousand tonnes production) by at least 30% by 2030 and 50% by 2040 (base year of 2020 for both targets) and to achieve Net Zero by 2050. We have outlined 2 concepts under the "EP Net Zero 2050" concept to achieve Net Zero greenhouse gas emissions targets.

The first concept is “exploring for lower carbon E&P portfolio”. We will manage E&P portfolio to be a lower-carbon organization. The second concept is “production and planet in balance”. We will move forward for zero routine flare for new asset, energy efficiency improvement and apply CCUS technologies and digitalization to mitigate GHG emissions. Carbon Capture Utilization & Storage are currently being explored, including converting CO₂ into Carbon Nanotube and Cyclic Carbonate. These initiatives reflect our commitment to addressing climate change and finding innovative ways to reduce emissions. We also focus on emissions offsetting through the planting of trees in forests and mangroves (Carbon Removal Project) which will increase the natural carbon sink in our offsetting portfolio. Ocean for Life projects will be continuously conducted to improve the biodiversity abundance and marine ecosystems as healthy oceans and coastal ecosystems are the efficient sources of carbon sink.



Figure 3 EP Net Zero 2040 Strategy Overview

3. STRATEGY

Decarbonization Driven by Internal Carbon Pricing

Our internal carbon pricing aligns business operations with climate goals, manages risks, encourages innovation, and meets stakeholder expectations. By putting a price on carbon, we can have a proactive business strategy that supports transition towards a low-carbon economy and contributes to addressing the challenges of climate change by guiding our business decisions towards lower carbon investment decisions.

We set our carbon price through looking at external resources such as IEA World Energy Outlook and internal carbon pricing in the oil and gas industry. We have designed our carbon price to ensure that it properly reflects the potential risk from carbon pricing schemes in the future and we look to update our internal carbon price on a regular basis, especially after the Thai Government announces the first Climate Change Act.

PTTEP has introduced an internal pricing scheme aimed at creating a right balance between GHG emissions management towards net zero aspiration and business growth opportunities, PTTEP is considering the application of a price of USD 35-60 per tonne of CO₂ equivalent in our investment decisions for new M&A projects, incorporating distinct steps for operating and non-operating assets. The price will be reviewed every 2 years or as necessary to ensure its effectiveness.



3. STRATEGY

Carbon Credits

Part of our Net Zero target will be achieved using high-quality long-term carbon credits. Our carbon credit strategy focuses on generating higher quality carbon credits from the Nature-Based Solution projects and Carbon Removal Type projects. Our Net Zero target specifies that the amount of carbon credits to be used to compensate for greenhouse gas emissions must not exceed 10 percent of the greenhouse gas amount of the Business-as-usual (BAU) emissions. We will disclose the Company's greenhouse gas inventory and progress against targets transparently and accurately in accordance with international standards.



Figure 4 Mangrove Plantation Project

As part of PTTEP's offsetting strategy, we aim to explore opportunities for potential offsetting initiatives. For instance, PTTEP seeks opportunities to support the development of carbon credit methodologies that encompass all eligible types and activities for carbon credit registration. In 2023, PTTEP collaborated with the Royal Initiative Discovery Foundation (Pid Thong Lang Phra) to execute a project to enhance community capacity in conserving and restoring peatland forests. This effort plays a pivotal role in carbon absorption and storage. The collaboration also involves developing a methodology for peatland forest carbon credit calculation, already approved by Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) for both Standard T-VER (Thailand Voluntary Emission Reduction) and Premium T-VER. Additionally, PTTEP partnered with the Fisheries Faculty of Kasetsart University, to continuously monitor the survival rates of seagrass plantations, utilizing both seedling and separation, for further project development. PTTEP collaborated with the Department of Marine and Coastal Resources to assess the CO₂ sequestration rate in a 12-rai seagrass area in Chumphon Province.

PTTEP has also collaborated with Chulalongkorn University for preliminary research on potential seaweeds and seashells that are best for CO₂ absorption and grow well in the Gulf of Thailand for developing pilot-scale cultivation in a hatchery.

On technological carbon removal, PTTEP developed a Direct Air Capture (DAC) technology with the goal of improving efficiency and achieving economic viability. This involves constructing a DAC test unit with the capability of handling 1 tonne CO₂ annually at PTTEP Technology and Innovation Center (PTIC).

3. STRATEGY

Diversify to Energy Transition Business

In 2023, PTTEP has also established new business portfolio ready for future energy transition under the “Diversify” Strategic Pillar. This business will help to sustain the long-term direction of PTTEP. The business units under the Energy Transition Business are as follows:

- **Carbon Capture and Storage:** The three main areas of PTTEP's plans are (1) promoting the enactment of laws, regulations, and exploration activities of Eastern CCS Hub project in eastern Thailand; (2) seeking investment opportunities in carbon capture and storage in Europe and the United States; and (3) developing the Eastern CCS Hub project and providing support for the expansion of Blue Hydrogen business.
- **Low-Carbon Hydrogen:** The importance of low-carbon hydrogen to PTTEP are threefold: (1) low-carbon hydrogen is critical in reducing greenhouse gas emissions in the atmosphere, especially for industries that rely on the use of fuels and are unable to switch to direct use of electricity produced from renewable sources (electrification). These industries include steel, petrochemicals, sea transport, and aviation; (2) low-carbon hydrogen has a potential to contribute a significant portion of income to PTTEP; and (3) PTTEP can leverage knowledge and experiences from upstream business to support our Blue Hydrogen business. In 2023 PTTEP was awarded the Green Hydrogen Concession Block in the Sultanate of Oman and entered the Project Development Agreement and Sub-Usufruct Agreement with Hydrogen Oman SPC (Hydrom).
- **Renewable Power:** PTTEP established the Future Tech Solar (Thailand) Company Limited (FST), which is a subsidiary of Future Tech Energy Venture Company Limited (FTEV), to operate a solar power plant. With 9.9 megawatts of electricity, the power plant will be used to fuel the S1 project, replacing gas-based power plant.

In addition, offshore wind is an interesting business for PTTEP because offshore wind allows PTTEP to leverage our capability in exploration and production and the demand for renewable energy is expected to grow continually. PTTEP plans to operate offshore wind business by seeking investment in projects such as Seagreen Offshore Windfarm in Scotland and exploring the potential of harvesting offshore wind in the Gulf of Thailand. We are also exploring opportunities to utilize offshore wind in exploration and production as well as carbon capture and storage businesses.



Figure 5 “Lan Sang Arun”, a solar power project to supply clean energy for S1 Project

3. STRATEGY

Diversify to Lower Carbon Products

Low carbon products: We consider low carbon products as those where the energy consumption intensity for operational control assess under Scope 1 and 2 are lower than the IOGP average. These kinds of products account for approximately 53% of our total revenues.

Avoided Emissions products: According to the [WRI white paper on “comparative emissions impacts of products”](#) avoided emissions products are products that allow customers to reduce their lifecycle emissions when compared to a baseline.

PTTEP has established a new business portfolio geared towards future energy transition under the “diversify” pillar. In 2023, PTTEP, through its wholly owned subsidiaries, achieved significant milestones in the new energies sector. This includes securing the Green Hydrogen Concession Block in the Sultanate of Oman and acquiring a 50% interest in the Seagreen Offshore Windfarm project in Scotland. Additionally, PTTEP's self-developed solar power project in Thailand (Lan Sang Arun) commenced power generation in June 2023.

In 2023, revenue from PTTEP's avoided emissions products was minimal (0.007%) due to only receiving a partial year of contributions from Lan Sang Arun. This is expected to increase substantially from 2024 onwards.



3. STRATEGY

Diversify to Energy Transition Business

AI AND ROBOTICS TECHNOLOGY BUSINESS

While PTTEP's AI and robotics technology business is not directly linked to the energy transition, it helps PTTEP explore opportunities beyond the oil and gas sector. Our current objectives in this sector are to scale up AI and Robotics Ventures (ARV) business through two key groups of operations:

ARV-Core Business is the headquarter engaging in research and development, and provision of solution using AI and Robotics technologies, as well as ventures ideation, incubation, development, and commercialization.



**AI AND
ROBOTICS
VENTURES**


PTTEP has 5 startups which ARV has spun-off into separate legal entities focused on further commercialization and development of their respective deep-tech domains.

ชื่อรายการ ID 4
คว้าง 41231,543,545
ตำแหน่ง 1
อำเภอ 1
ตำบล 1
ถนน 1



RCVULA

Unmanned Robotic Technologies and Data Analytics for Marine, Offshore and Underwater Assets



SKYLLER

AI-driven and Autonomous Aerial Drone Technologies, Operations and Data Analytics for Various Industries and Operations



varuna

One-Stop Agriculture and Climate Technology Solutions



CARIVA

Health Solutions Platform that Simplifies Data Access, Manage Security and Accelerates the Creation of Digital Health Solutions



bedrock®

Geospatial Location Intelligence Platform and AI Technology to provide advanced location insights

4. RISK MANAGEMENT

Climate-related Risks and Opportunities Management Process

PTTEP has identified Climate Change Risks and aims to integrate risk management into our business activities and decision-making, which cover core business activities in PTTEP such as strategic planning management, investment and divestment plans, capital project management, and operations and business process management. The group has established a risk management process to identify, assess, and manage climate-related risks and opportunities in line with the 2017 Committee of Sponsoring Organizations of the Treadway Commission (COSO) - Enterprise Risk Management framework.

Risk management is implemented at both the corporate and operational levels via a consolidated Corporate Risk Profile (CRP) to ensure that climate-related risks and opportunities are managed in accordance with PTTEP's Risk Management Guideline which are informed by Key Risk Indicators (KRIs) to enable PTTEP to set up effective mitigation, adaptation, and resilience measures. Climate change is integrated into this process as there are multiple types of risks that we consider in our CRP and KRIs.

4. RISK MANAGEMENT

Climate-related Risks and Opportunities Management Process

PTTEP has considered the emissions reduction requirements determined by existing Nationally Determined Contributions (NDCs) under the Paris Agreement for countries in which PTTEP operates and/or invests in such as Thailand, Myanmar, and Malaysia. Other risk types include current regulation, emerging regulation, technology, legal, market, reputation, acute physical and chronic physical risks, which are integrated into enterprise risk management process.

As mentioned in the Strategy section, the identified risks are also included into our Strategy and planning processes after they are identified by the process shown below.

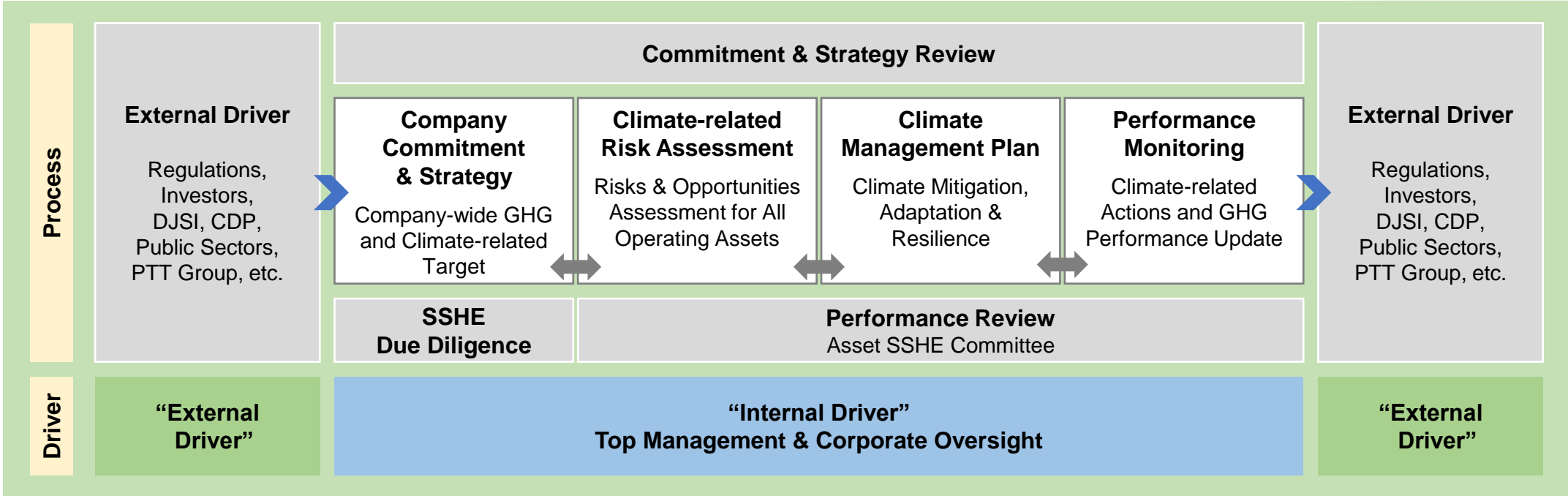


Figure 6 PTTEP’s Climate-related Risks and Opportunities Process

For other risk related disclosures that overlap with our climate-related strategy, please see the Strategy section. Such disclosures include:

- Disclosure of transition risks and physical risks identified
- Our consideration of regulatory requirements to our risks and opportunities

4. RISK MANAGEMENT

Climate-related Risks and Opportunities Management Process

Climate Management Plan

We have established our Climate Management Plan based on the information from our climate-related scenario analysis. PTTEP has disclosed on our full adaptation plan for physical risks at the link provided [here](#). Our adaptation plan covers 100% of our current operations and new operations. Our overall adaptation covers heat waves, tropical cyclones, heavy precipitation and drought and other water related risks. We have developed site specific actions with three time periods: 2020, 2026 and 2036 which includes monitoring of the weather, retrofitting equipment, site inspections and investment in flood protection.

PTTEP has been taking steps to reduce and minimize transition risks. We are investing more in natural gas, which is the cleanest fossil fuel source, and conducting studies to find ways to decrease greenhouse gas emissions. Furthermore, we are supporting Thailand's goals to achieve Carbon Neutrality and Net Zero Greenhouse Gas Emissions. PTTEP aims to achieve Net Zero GHG Emissions for our E&P business by 2050, focusing on scope 1 and scope 2 emissions that is under our operational control. PTTEP has also set targets to reduce greenhouse gas emissions intensity by 30% by 2030 and 50% by 2040, compared to the emissions in 2020.

Water is an important part of our operations and climate-related risks. We have an integrated plan for transition and physical risks, including water-related impacts. Our key water related physical risk related measures and KPIs include:

- Making water available for workers: we measure progress based on number of water stations within 50m of workers workstation
- Implement monitoring to include detection of extreme precipitation and tropical cyclone activity: we measure progress by tracking number of precipitation and cyclone indicators added to monitoring systems
- Increase the capacity of the water pond: track number of ponds with added capacity and track % change in capacity
- Increase flood protection: track onshore facilities with flood protection
- Monitor water stress: we measure progress by tracking number of water stress indicators added to monitoring systems
- Develop a water stewardship strategy
- Develop water reduction strategy

5. METRICS AND TARGETS

Integration of Metrics and Targets into Strategy and Risk Management Process

From the 2023 materiality issues and preparation for the energy transition trend, PTTEP is in position to move forward with 3 key strategies: Drive Value (strengthen E&P and ensure Thailand energy security), Decarbonize (manage E&P for lower carbon portfolio), and Diversify (focus on new business opportunities beyond E&P). of the Company.

In 2023, we have incorporated GHG emissions intensity reduction into the Corporate Key Performance Indicator (KPI), comprising of 10% of our Corporate KPI under the “Decarbonize” theme. We are also expanding our business activities under the “Diversify” theme by exploring opportunities in AI & Robotic Ventures (ARV), renewable energy and exploring the implementation of carbon capture and storage (CCS) as a service as a means for investing in permanent carbon removal, which makes up 25% of corporate KPI. These efforts demonstrate PTTEP's commitment to sustainability and addressing climate change. The remaining 65% of Corporate KPIs focusses on financial metrics, and which are key for the sustainability of the Company.

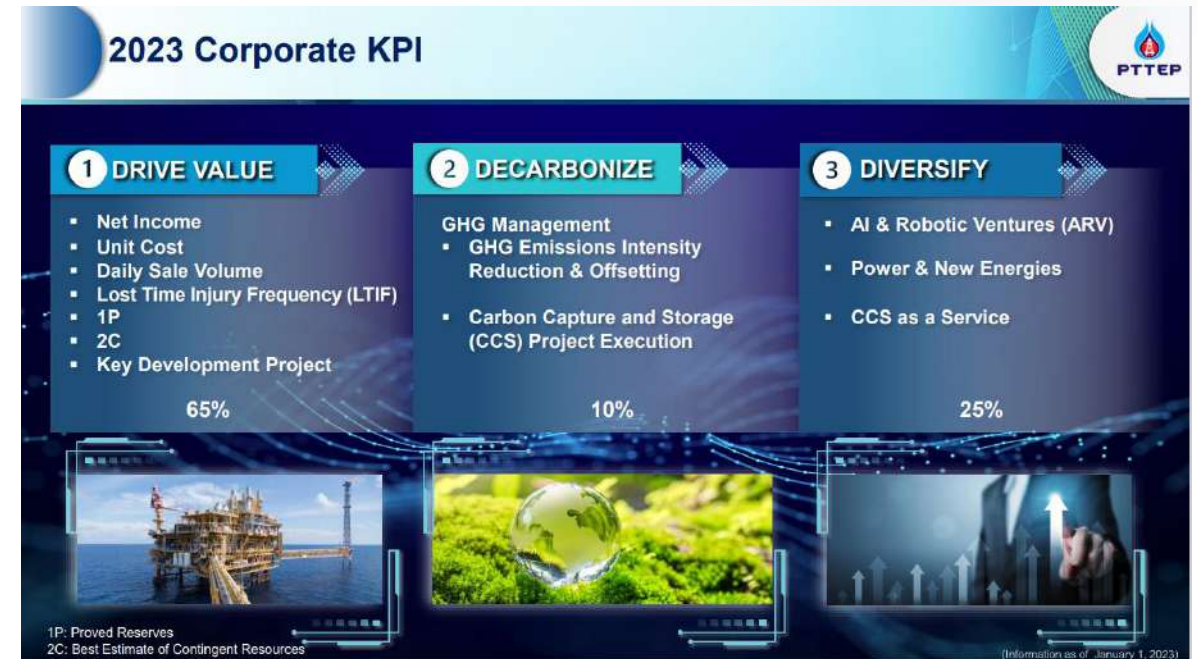


Figure 7 PTTEP 2023 Corporate KPIs

5. METRICS AND TARGETS

GHG Emissions Performance

PTTEP consistently monitors and reports on GHG performance in accordance with international standards to ensure adherence to the climate management plan and identify areas for improvement. We also prioritize transparency by disclosing our climate management efforts with the public and stakeholders. As part of our commitment to reducing GHG intensity by 30% by 2030, we successfully reduced GHG emissions intensity by 12.5% in 2023 compared to the base year of 2020.

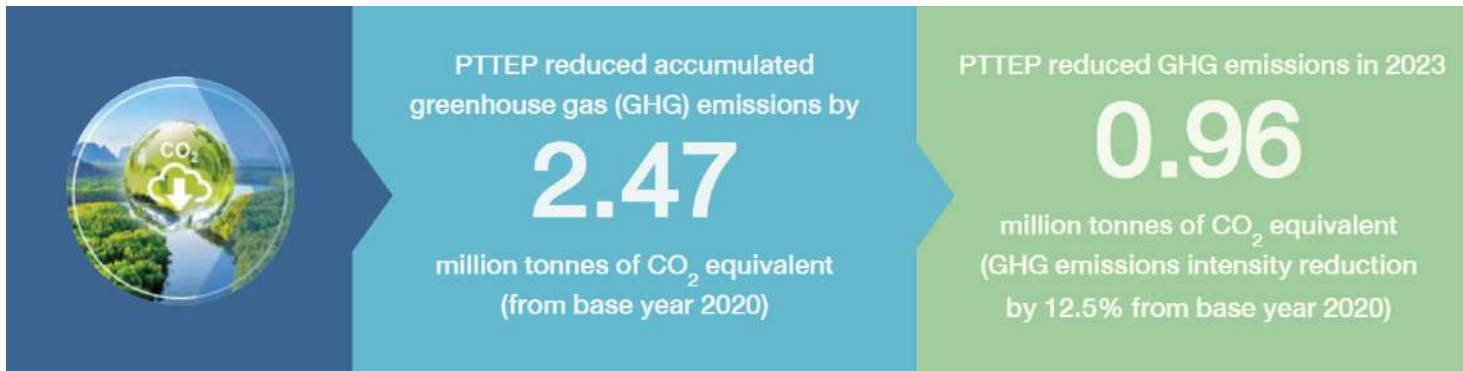


Figure 8 GHG Emission Management Performance as of 2023



5. METRICS AND TARGETS

GHG Emissions Performance

Our absolute emissions have increased proportionately with our increased production. However, we have managed to reduce our GHG intensity, which reflects our improved production efficiency and effectiveness of GHG mitigation actions. In addition to the data provided below, you may find more details at [here](#).

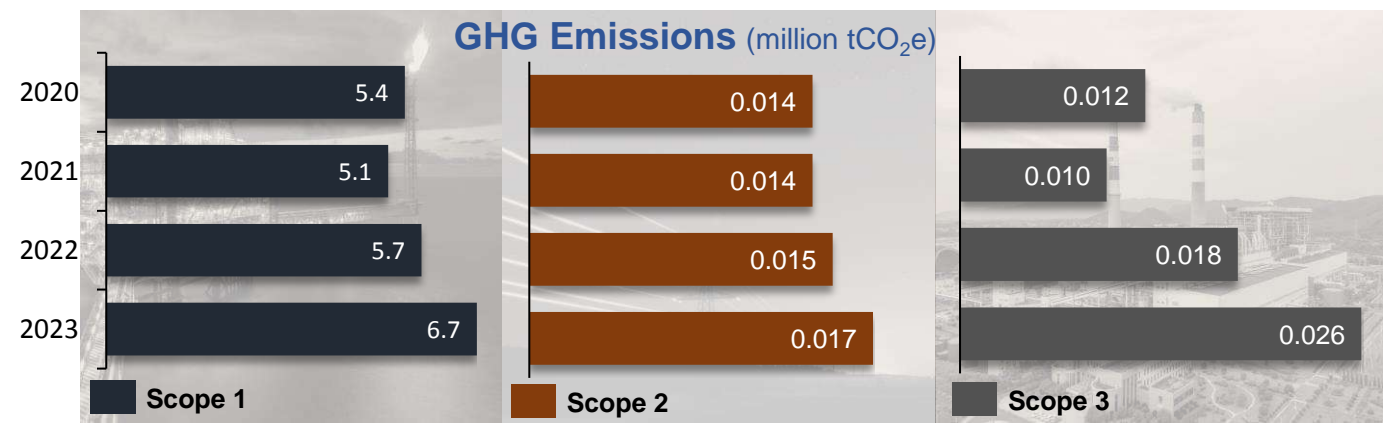


Figure 9 Absolute GHG emissions trend

Table 6 PTTEP GHG Emission Breakdown by Year

Scopes	2020	2021	2022	2023
Direct GHG emissions (Scope 1) (MtCO ₂ e)	5.388	5.148	5.711	6.744
Energy indirect GHG emissions (Scope 2 Market and Location Based ⁷) (MtCO ₂ e)	0.014	0.014	0.015	0.017
Other relevant indirect GHG emissions (Scope 3) (MtCO ₂ e) ⁸	0.012	0.010	0.018	0.026

Our GHG calculations are performed in the line with the PTT GHG Standard as well as external standards listed below.

- American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
- IPCC Guidelines for National Greenhouse Gas Inventories, 2006
- IPIECA’s Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011
- ISO 14064-1
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

⁷ We have not purchased electricity using contractual instruments (i.e. renewable energy certificates, power purchase agreements or direct purchase of electricity from third party suppliers). Therefore our Scope 2 emissions for location based and market based accounting methods are the same.

⁸ Includes third party transportation and air travel emissions only.

5. METRICS AND TARGETS

Oil and Gas Specific Metrics and Other Metrics

Oil and gas indicators included in the Environmental Management Performance Data report (link [here](#)) are:

- Total water withdrawal
- Total water consumption
- % of water consumption in high or extremely high baseline water stress
- Produced water separated by volume (1) discharged (2) used for injection (3) treated and discharged (4) disposed by waste processor (5) disposed by evaporation
- Number of onshore sites: 5
- Number of offshore facilities: 7

Renewable energy and energy transition indicators:

- Energy transition business CAPEX: USD 29.5 million
- Renewable energy revenue and sales: We did not have any sales for the reporting year, however you can see our historical sales at our website [here](#), page 8.
- Green hydrogen project Oman Capacity: 1.2 million tonnes per year
- Solar power equity share capacity (Lan Sang Arun Project Thailand): 10 megawatts
- Offshore wind equity share capacity (Seagreen Offshore Windfarm Project Scotland): 290 megawatts



APPENDICES

APPENDIX A - TCFD CONTENT INDEX

You can find page numbers for TCFD related disclosure requirements in the table below. You can also find additional content linked to TCFD disclosures in external documents below and full TCFD Standard [here](#).

Ref. No.	Disclosure Description	Page	Links/Comments
Governance			
(a)	Describe the board's oversight of climate-related risks and opportunities	5	Corporate Governance and Sustainable Development Committee LINK Risk Management committee: LINK Sustainability Governance Structure: https://www.pttep.com/en/Sustainability/Sustainability-At-Pttep/Sustainability-Governance-Structure.aspx Roles and Responsibilities CDP Climate Change 44.5 Incentives CDP Climate Change 44.5
(b)	Describe management's role in assessing and managing climate-related risks and opportunities	5	Roles and Responsibilities CDP Climate Change 4.55 Incentives CDP Climate Change 44.5

APPENDIX A - TCFD CONTENT INDEX

Ref. No.	Disclosure Description	Page	Links/Comments
Strategy			
Climate-related risks and opportunities			
(a)	Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term	12-17	Climate Management Plan: LINK Risk Management Process: CDP Climate Change 2.1, 2.2.2
(b)	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	12-17	Climate Management Plan: LINK Risk disclosure: CDP Climate Change 33.1.1 Opportunity disclosure: CDP Climate Change 3.6.11
(c)	Describe the resilience of the organization's strategy, taking into consideration different climate related scenarios, including a 2° C or Lower scenario.	19	Climate Management Plan: LINK Risk Management Process: CDP Climate Change c3.2, c3.4

APPENDIX A - TCFD CONTENT INDEX

Ref. No.	Disclosure Description	Page	Links/Comments
Risk Management			
(a)	Describe the organization's processes for identifying and assessing climate-related risks	26-28	Climate Management Plan pg.3: LINK Risk Management CDP Climate Change c2.2a
(b)	Describe the organization's processes for managing climate-related risks	26-28	
(c)	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	27-28	
Metrics and Targets			
Climate-related metrics			
(a)	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	29	Internal Carbon Pricing LINK
(b)	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks	30-31	Sustainability Performance Data: LINK
(c)	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	30	Net Zero Targets, Sustainability Report pg. 26-27: LINK PTTEP Sustainability Framework and Strategy: LINK PTTEP 2022 Corporate KPI: LINK

APPENDIX B – PROGRAM/ POLICIES TO ALIGN COMPANY’S POLICY ENGAGEMENT ACTIVITIES¹ WITH THE PARIS AGREEMENT

PTTEP is committed to engaging with our stakeholders positively and responsibly through our contributions as we grow our business by balancing our impact on Thailand's economy, society, and environment. To help achieve this, we contribute to national and international associations that support industries and the country in improving economic, environmental, and social dimensions for sustainable growth. We conduct all our engagement activities with government and other parties in line with local laws.

PTTEP provides support to associations and organizations so they can carry out their objectives of developing and endorsing laws and policies to achieve the most optimal outcomes for the environment, society, and economic development. These associations and organizations support policymakers through disseminating research findings, information from outside sources, and ideas about various industries, health and safety, sustainable development for Thailand, minimizing environmental impact, and putting the Sustainable Development Goals (SDGs) into practice.

PTTEP, in support of the Paris Agreement, aims to achieve net zero emissions by 2050 through three strategic business pillars: (1) Drive Value, strengthening and monetizing the petroleum exploration and production business, (2) Decarbonize, reducing greenhouse gas emissions, and (3) Diversify, expanding into new businesses beyond E&P focusing on future energy and advanced technology. To ensure that our engagement activities, including policy engagement, are consistent with our overall climate change strategy and Paris Agreement, PTTEP conducts the climate-risk assessment and materiality assessment to understand the risks and opportunities which are incorporated in corporate climate change strategy. As one of our energy transition businesses, carbon capture and storage (CCS) is the focus of our primary climate-related policy activities. We think that CCS is a key component of our decarbonize strategy, and it's also a key component of the decarbonization route for many energy, utility, and heavy industrial firms, as well as other exploration and production firms. PTTEP has implemented efficient governance and oversight procedures to guarantee that our contributions assist in achieving Thailand's NDC and the Paris Agreement. By following, sustainable frameworks which focus on three key aspects: High Performance Organization (HPO), Governance, Risk Management and Compliance (GRC) and Sustainable Value Creation (SVC). Consequently, the purpose of the Corporate Governance and Sustainability Committee is to set goals, formulate policies and statements, and advance sustainability initiatives. In addition to accountability to the environment, society, and community. PTTEP's management system for contribution is in place and aligned with the UNGC's [Guide for Responsible Corporate Engagement in Climate Policy](#). The following disclosures are aligned with the [2022 Global Standard for Responsible Climate Lobbying](#).

¹We do not conduct or sponsor lobbying activities, we instead conduct other policy engagements that are in line with the law.

POLICY AND COMMITMENT

No.	Framework Indicator	PTTEP Actions
1	Make a public commitment to aligning all of its climate change lobbying with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	<p>PTTEP commits to conducting all climate change-related activities, including climate lobbying, in alignment to Thailand's NDC and the Paris Agreement.</p> <p>PTTEP also commits to achieving Net Zero Greenhouse Gas Emissions by 2050 with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels. Our net zero commitments have been communicated internally and externally and is also included in our Sustainability Policy and Guidelines PTTEP.</p>
2	Apply the scope of this commitment to all of its subsidiaries and business areas, and all operational jurisdictions	PTTEP's climate-related policies and climate strategy is applicable to all PTTEP's subsidiaries, jurisdictions, and business areas.
3	Publicly commit to taking steps to ensure that the associations, alliances and coalitions of which it is a member conduct their climate change lobbying in line with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	PTTEP provides support to associations and organizations so they can carry out their goal of developing and endorsing laws and regulations. By disseminating data from outside sources, research, and ideas about sustainable development for Thailand, various industries, health, and safety, minimizing environmental impact, and executing the Sustainable Development Goals (SDGs), these associations and organizations support policymakers. The associations' and organizations' initiatives help Thailand fulfill its NDC and the Paris Agreement.

GOVERNANCE (1)

No.	Framework Indicator	PTTEP Actions
4	Assign responsibility at board level for oversight of its climate change lobbying approach and activities	The Corporate Governance and Sustainability Committee (CGS) oversees the Management Committee (MC) which provides review and updates from the Corporate Sustainability Strategy Function. The CGS oversees and keeps track of how well climate-related concerns are being addressed in relation to goals and targets. The CGS also decides whether climate-related policy engagement, such as CCS which is the pivotal part of PTTEP energy transition business.
5	Assign responsibility at senior management level for day-to-day implementation of its climate change lobbying policies and practices	The Corporate Sustainability Strategy Function was created at the management level to oversee the strategic orientations for resolving climate change-related problems. Making sure that the organization's and its partners' policies, plans, and metrics are in sync is one of the duties of the Corporate Sustainability Strategy Function. This involves making sure that PTTEP's overarching visions and net zero goal are reflected in all of our climate-related engagement policies and activities. The Corporate Sustainability Strategy Function notifies the Corporate Governance and Sustainability Committee (CGSC) and the Management Committee (MC) of the implementation's outcomes and progress. The CGS will get the final summary to supervise and offer suggestions for the following actions.
6	Establish an annual monitoring and review process to ensure that all of its direct and indirect climate change lobbying activities across all geographies are consistent with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	<p>PTTEP conducts a quarterly monitoring and review process to assess whether public policy engagements are aligned with the Paris Agreement for all direct lobbying activities and trade associations we are involved in.</p> <p>Internally, PTTEP climate-related policy engagement activities must be overseen by the Corporate Governance and Sustainability Committee (CGSC) where a review process is conducted to ensure that all direct and indirect activities across all geographies are consistent with Thailand's NDC and Paris Agreement.</p> <p>Externally, within each organization that PTTEP contributes to, PTTEP is involved in the development of a monitoring and evaluation system which is focused on ensuring that the activities of these organizations are consistent with Thailand's NDC and the Paris Agreement. To illustrate this effort, PTTEP actively participates in various sustainability-focused networks, including the United Nations Global Compact (UNGC), Global Compact Network Thailand (GCNT), Thailand Business Council for Sustainable Development (TBCSD), Thailand Responsible Business Network (TRBN), and the ESG Network of the Thai Listed Companies Association.</p>

GOVERNANCE (2)

No.	Framework Indicator	PTTEP Actions
7	Establish a process for engaging with stakeholders related to setting and reviewing its climate change lobbying policies, positions and activities	<p>PTTEP regularly engages with our stakeholders involved in climate-related policies and activities including our suppliers, customers, government representatives as well as industry peers and trade association and organization members to review our climate change-related policies, positions, and activities.</p> <p>PTTEP works closely with government institutions and non-profit organization .To catalyze net zero 2050 commitment, PTTEP has established a Memorandum of Understanding (MoU) with the Office of Natural Resources and Environmental Policy and Planning to launch joint actions on climate change and biodiversity conservation, and an MoU with the Royal Forest Department; the National Park, Wildlife and Plant Conservation Department; Marine and Coastal Resources Department; as well as PTT Group for a two-million-rai reforestation project. PTTEP also has collaboration agreement with leading university and institutes to foster research and development networks through collectively leveraging their organizational knowledge.</p>
8	Establish a clear framework for addressing misalignments between the climate change lobbying positions adopted by the associations, alliances and coalitions of which it is a member and the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	We are currently developing a framework for addressing misalignments between climate change lobbying positions adopted by our stakeholders.

ACTION

No.	Framework Indicator	PTTEP Actions
9	Publish a detailed annual review covering the company's assessment and actions related to the 1.5°C-alignment of: (a) its own climate change lobbying activities; (b) the climate change lobbying activities of the associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support	PTTEP maintains the Company's participation in work plan implementation and continuously monitors progress through multiple channels such as joint development activities, meetings, and annual performance review meetings to ensure alignment with the country's climate action goals and government policies. Results of the review indicated that there were no misalignments between the climate lobbying activities conducted by the trade associations and Thailand's NDC or the Paris Agreement. All of PTTEP's climate change-related actions, is approved by the board through the CGS.
10	Recognise the existence of and report on actions to address any misalignment between its climate change lobbying and/or the climate change lobbying activities of its trade associations, coalitions, alliances or funded thinktanks and the goal of limiting global temperature rise to 1.5°C above preindustrial levels	PTTEP has not identified any misalignment between our climate change lobbying and/or the climate change lobbying activities of the trade associations and Thailand's NDC or the Paris Agreement.
11	Create or participate in coalitions that have the specific purpose of lobbying in support of the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	Through the Company's EP Net Zero 2050 concept, PTTEP works with several partners to address climate change. One such partner is the Office of Natural Resources and Environmental Policy and Planning (ONEP), a government organization in charge of managing the nation's policies and plans for preventing and addressing issues related to climate change, such as carbon capture, utilization, and storage (CCUS) and studies and research on the subject. PTTEP has collaborated with ONEP with the goal of establishing policies and procedures for greenhouse gas reduction led by the private sector. In accordance with the Paris Agreement and the United Nations Framework Convention on Climate Change, this cooperative endeavor also seeks to support Thailand's goals of becoming carbon neutral by 2050 and net zero greenhouse gas emissions by 2065.

SPECIFIC DISCLOSURES (1)

No.	Framework Indicator	PTTEP Actions
12	Publicly disclose, for all geographies, its membership of, support for and involvement in all associations, alliances and coalitions engaged in climate change related lobbying	<p>PTTEP engages in climate change-related lobbying through our membership, support, and involvement in the following trade associations which covers 2 main issues:</p> <p>1. Responsible business operations, especially in sustainability and climate change.</p> <ul style="list-style-type: none"> • Petroleum Institute of Thailand (PTIT) • The Federation of Thai Industries (F.T.I) • Thailand Business Council for Sustainable Development (TBCSD) <p>2. Support the development of sustainable petroleum industries</p> <ul style="list-style-type: none"> • Petroleum Institute of Thailand (PTIT) • The Federation of Thai Industries (F.T.I) • Oil industry Environmental Safety Group Association (IESG) <p>The primary objective of these groups is to focus on the advancement and enhancement of sustainable development for all industries, with their focus on the petroleum and petrochemical industries. Such activity includes but is not limited to, establishing sustainable and appropriate national policies, introducing emerging technologies that can minimize environmental and social impacts during operation, and encouraging occupation and community health and safety.</p>

SPECIFIC DISCLOSURES (2)

No.	Framework Indicator	PTTEP Actions	
13	Publicly disclose, for each of these organizations: (a) how much it pays to them on an annual basis; (b) those organizations where it sits on the board or plays an active role in committees or other activities related to climate change	Contributions to Each Organization	
		Trade Association	Contributions 2023 - USD
		Contributions to Lobbying, interest representation or similar	0
		Contributions to Local, regional or national political campaigns / organizations / candidate	0
		Contributions to trade associations/ tax-exempt groups and sustainability business partners	321,869
		Contributions to trade associations/ tax-exempt groups (Responsible global practices for oil & gas industry)	269,385
		International Association of Oil & Gas Producers (IOGP)	107,576
		International Petroleum Industry Environmental Conservation Association (IPIECA)	60,094
		Petroleum Institute of Thailand (PTIT)	62,432
		Indonesian Petroleum Association (IPA)	13,389
		Oil Spill Response Limited (OSRL)	15,253
		Oil Industry Environmental Safety Group Association (IESG)	10,641
		Contributions to sustainability business partners (Collaboration and partnership with business sectors for sustainability)	43,484
		Thailand Business Council for Sustainable Development (TBCSD)	7,383
		United Nations Global Compact (UNGC) via Global Compact Network Thailand (GCNT)	15,389

SPECIFIC DISCLOSURES (3)

No.	Framework Indicator	PTTEP Actions
14	Publicly disclose its overall assessment of the influence that its climate lobbying has had on (a) supporting ambitious public climate change policy; (b) the company's ability to deliver its own corporate transition strategy	<p>PTTEP supports ambitious public climate change policy through our contributions to trade associations and organizations that align with Thailand's NDC and the Paris Agreement. These contributions are in line with PTTEP's ambitions to achieve net zero emissions by 2050 which supports the goal of restricting global temperature rise to 1.5⁰C above preindustrial levels.</p> <p>By supporting projects and initiatives, through our climate lobbying activities, that contribute to Thailand's low carbon economy transition in line with Thailand's NDC and Paris Agreement, PTTEP influences the development of sectoral and national climate-related policies and initiatives. In the long-term, this supports and enables PTTEP to drive our own corporate transition strategy which aims to achieve net zero emissions by 2050.</p>



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