Krungthai
กรุงไทย

Climate-related Financial Disclosure 2022

1.1 Climate Context

Global warming and climate change have become serious and urgent issues at both the national and global levels. The business implications of a low-carbon transition will become increasingly significant. The IPCC Special Report on Global Warming of 1.5°C advises that we need to keep the global average temperature rise below 1.5 degrees to prevent catastrophic climate change. There is a rapidly closing window to keep global emissions in line with the scientifically determined remaining budget. To achieve this goal, significant capital mobilization is required. The IPCC's 6th assessment report emphasizes that climate investment may need to be increased by 3-6 times to meet the desired objectives.

Thailand, specifically, faces high exposure to the effects of climate change. According to the 2021 Germanwatch Climate Risk Index, Thailand has been ranked as the 9th most affected country by global warming between 2000 and 2019. Bangkok, in particular, will be severely impacted due to sinking land and the intensification of extreme precipitation events, affecting a large population and infrastructure. Moreover, Thailand's economy is highly dependent on natural resources for agriculture, which is likely to be threatened by significant shifts in climate patterns.

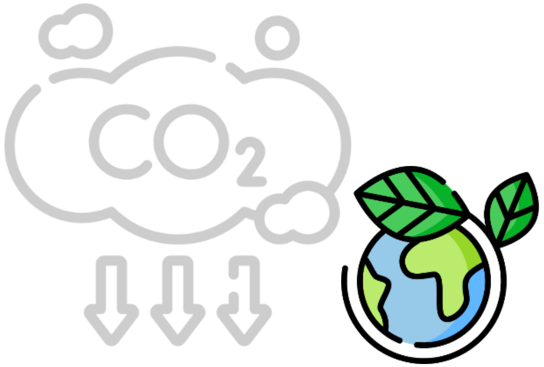
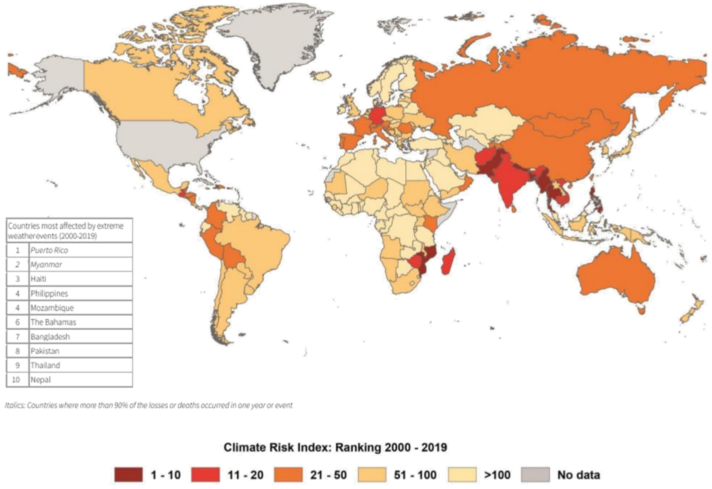


Figure 1: World Map of the Global climate risk index 2000 – 2019
(Source: Germanwatch and Munich Re NatCatSERVICE)



1.2 Krungthai Focus on Climate and Sustainability

Krungthai Bank is a development financial institution that helps create opportunities for people to gain access to capital funds. We also provide the people with financial literacy to strengthen their economic foundations. By applying technology and innovation to manage and provide financial services, we aim to improve the country's competitiveness while striving to reduce social inequality under stable, transparent, and sustainable organizational management.

At Krungthai Bank, we conduct our business according to the principles of sustainability to effectively manage economic, social, and environmental risks and opportunities. Aspiring to be a reliable pillar of Thailand's economy, we pursue long-term profitable growth and promote equality and inclusivity through innovative and accessible financial resources and services. Not only is sustainability an integral part of our operations, but it also serves as the foundation for the development direction of our entire business. The Krungthai Sustainability Framework emphasizes establishing a resilient and agile foundation that promotes growth and enables us to embrace new challenges and opportunities in a volatile environment.

1.3 Krungthai's Climate Initiative

2022 marks an important year for Krungthai in terms of sustainability A strategic decision has been set forth by the CEO to meet net-zero within our operations within 2030, reflecting our ambition towards a low-carbon economy. Our target is ahead of Thailand's pledge to achieve carbon neutrality in 2050. In addition, we aim to align our financed portfolio emissions with Thailand's Net Zero goal in 2065.

Since 2019, the Bank has monitored direct and indirect greenhouse gas emissions (scope 1 & 2) in accordance with standards set by the Thailand Greenhouse Gas Management Organization (TGO) and the Intergovernmental Panel on Climate Change (IPCC). In 2022, the Bank also conducts the GHG accounting of financed emissions as per the recommendation of PCAF.

To achieve its climate targets, the Bank's decarbonisation strategy focuses on improving internal operations, developing innovative products and services, and providing financial solutions that promote the transition to a low carbon society, as illustrated in Part 3.

1.4 About the TCFD

Climate-related risk is a topic that has gained growing interest from various stakeholders. However, the nature and timeframe of climate impacts are complex and ambiguous, posing a challenge when comparing different companies' assessments of climate change. The Task Force on Climate-related Financial Disclosures (TCFD) was established in 2015 by the Basel-based Financial Stability Board to address this challenge. Its objective is to provide a standardized framework for disclosing the financial impacts of climate-related risks, enabling creditors and investors to make well-informed decisions that are comparable, consistent, and clear. Since its launch in 2017, the TCFD guidelines have gained strong momentum and widespread adoption worldwide due to their effective implementation by reporting corporations.

At Krungthai, we strongly believe in the recommendations put forth by the TCFD. Through the implementation of these recommendations, we have incorporated climate-related aspects to enhance our business sustainability across our social and environmental pillars. The year 2022 marks an important milestone for us, as we report climate matters aligned with the TCFD for the first time, and we aim to continue disclosing our progress.

This report by Krungthai intends to disclose our current processes, which we have begun implementing under the four elements of the TCFD: Governance, Strategy, Risk Management, and Metrics and Targets. The report is structured to address each element in separate parts.

Figure 2: KTB's Climate Initiative

Short-term Target

10%

The Bank establishes short-term environmental targets that prioritize sustainability efforts within the organization. This includes a dedicated focus on reducing energy consumption, water usage, and waste disposal. Additionally, the Bank is actively working towards achieving a reduction of GHG emissions by 10% by 2022, compared to the baseline year of 2020.

Long-term Target

NET ZERO

GHG Emissions

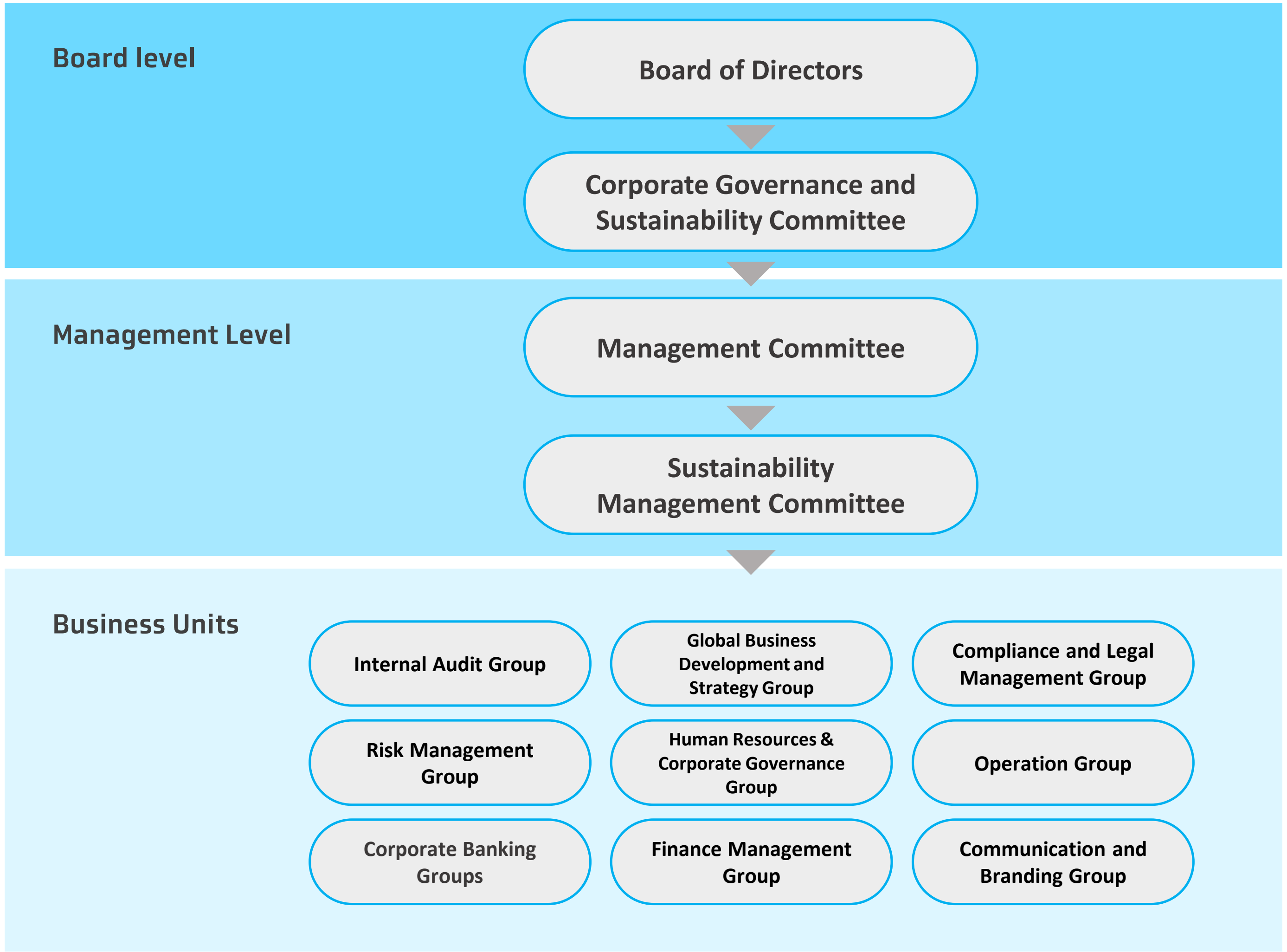
By 2030

Internal Operation
(Scope 1 & 2)

Financed Portfolio

targets in alignment
with Thailand's aspiration

Figure 3: Climate change governance at KTB



At Krungthai we recognize that we have an important role to play in driving Thailand transition towards a low carbon economy. This is in line with our vision statement of “Growing Together for Sustainability”. The existing organizational structure allows our business activities to be conducted in accordance with the highest environmental, social and governance (ESG) standards and meet UN sustainable development goals (SDG). We ensured the roles and responsibilities assigned to relevant department and personnel will provide a positive impact to our stakeholders.

The specific roles and responsibility taken by the board and management level are outline in Figure 3. Each governance level has specific function but works collaboratively for the best interest of the bank to provide climate resilience.

In addition, Krungthai has placed climate related issues as a priority by incorporating remuneration based on climate performance.

Governance	Roles in climate operations	Frequency of Meeting
Board of Directors	• Oversee all corporate sustainability policy. • Provide clear guidance and direction to the management team on the Bank's approach to managing climate-related risks and opportunities. • Validate group strategy on climate-related topics. • Provide oversight and guidance on the Bank's climate-related risk management policies and procedures. • Regularly review the Bank's progress against its climate-related targets, KPIs, and commitments, and assess the effectiveness of its risk management strategies.	Quarterly
Corporate Governance and Sustainability Committee	• Develop and implement strategies to manage climate-related risks and opportunities, in line with the Board's guidance and direction. • Establish and maintain policies and procedures to manage climate-related risks and opportunities, including governance structures, risk management frameworks, and reporting mechanisms. • Integrate climate-related risks and opportunities into the Bank's decision-making processes, including investment decisions, lending decisions, and risk management decisions. • Build awareness and capacity among employees and stakeholders regarding climate-related risks and opportunities.	Quarterly
Management Committee	• Set overall climate strategy and goals. • Allocate resources, such as funding and personnel, to support climate-related initiatives. • Monitor and report of climate-related metrics and progress towards established goals. • Assess the Bank and its financial business group’s risk management policies and strategies cover ESG risks. • Oversee the policy and strategy for responsible risk management.	Monthly
Sustainability Management Committee	• Develop, operational guidelines, together with consider and screen budgets for the corporate governance and the social & environment responsibility. • Regularly review to ensure that content matters are appropriate and up-to-date. • Supervise the performance regarding the corporate governance and the social & environment responsibility according to the specified policies and goals. • Recommend Code of Best Practices or regulations for the Management committee and other established committees of the Bank. • Recommend requirements related to the Bank’s Code of Business Conduct. • Promote the dissemination of a culture of good corporate governance and participation in social activities for sustainable development to be understood at all levels and to be effective in practice.	Monthly

Table 1: Management’s roles in climate operations

Framework on climate trainings as a part of its commitment to climate and sustainability

Krungthai recognizes the critical importance of raising awareness about climate risks and opportunities among its employees and customers. As part of its commitment to climate and sustainability objectives, Krungthai places significant emphasis on educating corporates climate consciousness. Furthermore, Krungthai actively engages with its customers, offering valuable insights and advice on climate risk mitigation and climate-driven opportunities. To ensure comprehensive training, Krungthai employs both internal and external experts who conduct a wide range of mandatory and voluntary capacity-building programs.

The board of directors and executives receive in-depth training on the implications of climate change. Equipped with this knowledge, they are well-prepared to make informed decisions pertaining to climate-related matters.

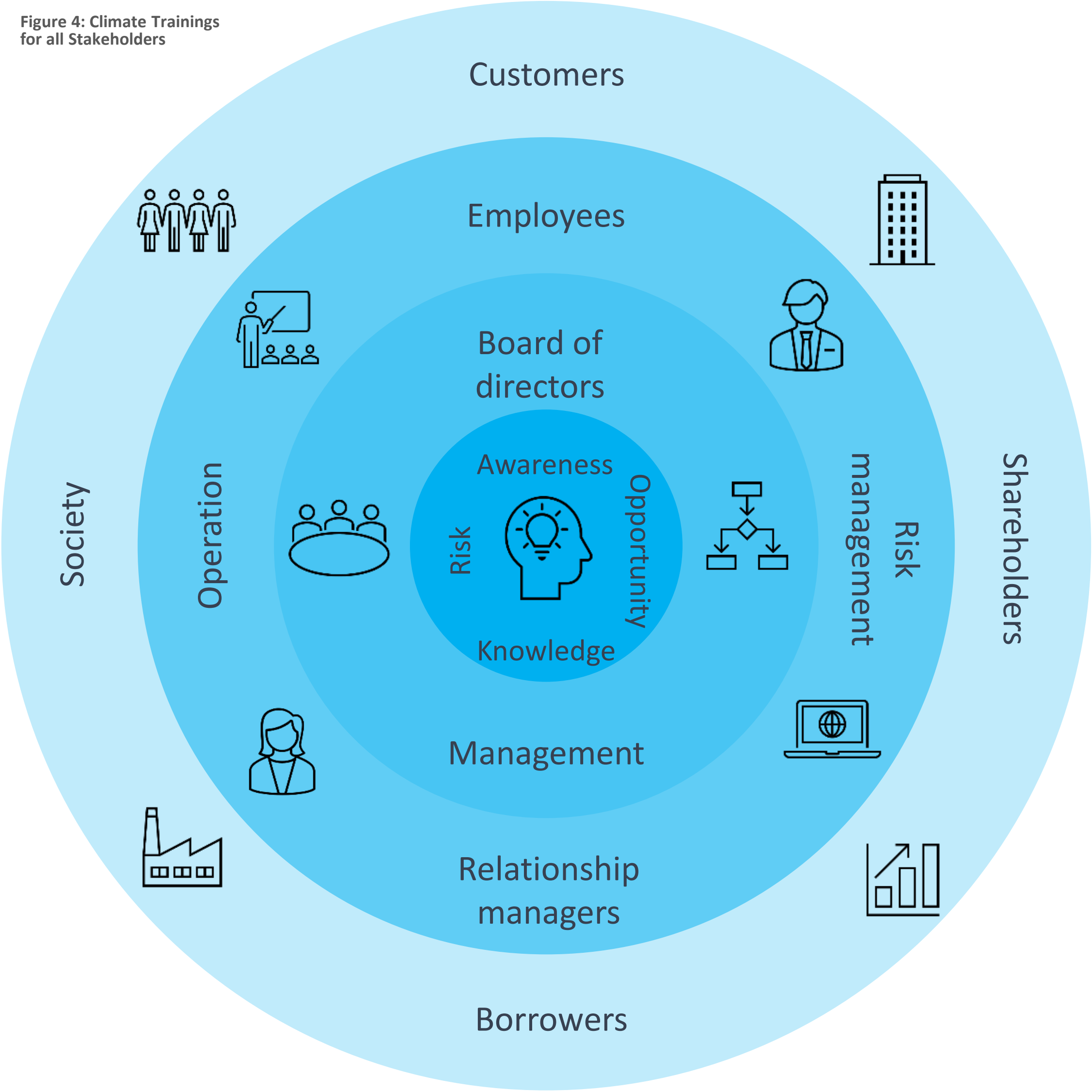
The front office, including relationship managers, undergoes thorough training on the implications of climate change for their corporate clients. This training equips them to engage in informed dialogues, providing support to customers in terms of mitigation and adaptation strategies. These efforts contribute to reducing risk for the bank and enhancing the opportunity of green financing products.

The middle office, particularly the risk management and compliance departments, undergoes extensive training in climate risk assessment at the project, company, and portfolio levels. This enables them to effectively evaluate and manage climate-related risks associated with various activities.

The back office and operations teams receive relevant training focused on reducing greenhouse gas (GHG) emissions in Krungthai 's own operations. By equipping these employees with the necessary training, its workforce at all levels, fostering a corporate culture that skills and knowledge, Krungthai actively promotes environmentally responsible practices within the organization.

Recognizing the importance of effective communication, all Krungthai employees are required to participate in climate trainings that enable them to effectively convey the bank's climate commitments to all stakeholders.

Figure 4: Climate Trainings for all Stakeholders



3.1 Krungthai's Operational Climate Risks, Opportunities, and Potential Impacts

Forecasting climate-related risks poses a significant challenge in accurately predicting future events. The complexities and uncertainties involved make it difficult to determine the severity and likelihood of climate-induced events for businesses. Recognizing this inherent uncertainty, Krungthai has adopted a flexible approach by developing a robust process framework for evaluating climate risk. This framework enables the formulation of a resilient strategy based on the best scientific knowledge and available data at the time of evaluation. Importantly, it allows for continuous monitoring, evaluation, and revision as new information emerges. By embracing this adaptive approach, Krungthai aims to effectively navigate the constantly evolving landscape of climate-related risks, ensuring resilience and sustainability across all potential outcomes. This four-step process is illustrated in Figure 5.

Figure 5: Framework for identifying and evaluating climate-related risk business impact

1. Identify climate-related risks and opportunities
2. Prioritize climate-related risks based on expected severity and likelihood
3. Conduct scenario analysis and estimate financial impacts
4. Elaborate resilient strategy

1. Identifying climate-related risks and opportunities: Climate-related physical risks, transition risks, and opportunities specific to Krungthai's own operations are identified for each timeframe. The three chosen timeframes for assessing climate-related risks and opportunities are as follows:

- Short-term: <5 years (within 2025)
- Medium-term: 5-10 years (within 2030)
- Long-term: 10-30 years (within 2050)

2. Prioritizing risks and opportunities for scenario analysis: Once the climate-related risks and opportunities specific to Krungthai's operations are identified, they are prioritized based on three different factors:

- Data availability and climate model availability
- Expected severity of the impact
- Likelihood of the impact

3. Conducting scenario analysis and estimating financial impacts: The scenario analysis of physical risks and transition risks will be conducted from the IPCC and IEA which are summarized in Table 2.

4. Elaborating a resilience strategy: The resilience strategy has been formulated to manage physical and transition risks that are predicted to happen by 2030. The strategy addresses Scope 1 & Scope 2 GHG emissions within Krungthai own operation and aligns with the climate ambitions to achieve Net Zero within own operations in 2030.

Table 2: Scenario chosen for Physical and Transition Risks

Type	Climate Scenario	Description
Physical Risk	Sustainability - Taking the Green Road (SSP1-2.6)	Low GHG emissions: CO_2 emissions cut to net zero around 2075
	Middle of the Road (SSP2-4.5)	Intermediate GHG emissions: CO_2 emissions around current levels until 2050, then falling but not reaching net zero by 2100
	Fossil-fueled Development - Taking the Highway (SSP5-8.5)	Very high GHG emissions: CO_2 emissions triple by 2075
Transition Risk and Opportunity	Stated Policies Scenario (STEPS)	A scenario which reflects current policy represented the business-as-usual pathway in which no further effort is implemented to mitigate climate change.
	Announced Pledges Scenario (APS)	A scenario which assumes that all climate commitments made by governments around the world, including Nationally Determined Contributions (NDCs) and longer-term net zero targets, will be met in full and on time.
	Net Zero Emission by 2050 scenario (NZE)	A scenario represents a world where the transition takes off at a rapid rate to limit the warming to 1.5°C with limited or no temperature overshoot (achieve net zero CO_2 emissions by 2050).

3.1.1 Identification of Climate-related risks to Krungthai's own operation

Approach for Identification:

Annual workshop on climate related risk is conducted to identify risks items to update risk items that may affect the bank. Input from different business units alongside external experts are used to produce a summary of risk items from both physical and transition risks across the short, medium and long timeframe.

Risk Definitions:

Krungthai follows the TCFD classification of climate risks into physical and transition risk. Under physical risks, we consider both acute risks from immediate direct climate impact and chronic risks that manifest over an extended period. For transition risks we considered policy and legal risks, technology risks, market risks, and reputation risks.

Table 3: Climate-related risks to Krungthai's own operation

Type of Risk	Risk Items	Impacts to Krungthai's Operation	Timeframe of Risks
Physical	P1: Increased severity and likelihood of heatwave P2: Increased severity and likelihood of flood	• Rising operation costs and expenditures e.g. electricity, maintenance cost, preventive cost, medical expenses • Business interruptions	Short – Long term
Transition	T1: Government enforces carbon pricing instruments e.g. carbon tax, ETS	• Rising operation costs and expenditures e.g. training expenses, disposal cost, consultant fee • Increase investment costs • Write-off and depreciation of assets	Medium-Long term
	T2: Increased investment budget in low-carbon technology e.g. using renewable energy sources, energy storage technologies, energy efficiency enhancement technologies		Medium-Long term
	T3: Increasing consumer demand for green financing		Medium-Long term
	T4: Pressured by rating score and benchmarking against other banks		Short – Long term

3.1.2 Climate-related opportunities to Krungthai's own operation

Krungthai's operation decarbonization opportunities:

Operation decarbonization through increasing our operation efficiency or switching energy could potentially have a significant impact to Krunghthai both directly and indirectly. By implementing measures to improve resource efficiency, Krungthai can reduce greenhouse gas emissions as well as realize cost reductions from energy savings. These are opportunities that we have identified beforehand and have continuously been implementing reduction measures as part of our eco-efficiency.

Table 4: Climate-related opportunities to Krungthai's own operation

Type of Opportunity	Opportunities	Positive Impacts to Krungthai's Operation	Timeframe of Opportunities
Resource Efficiency	Improve energy utilization processes to be more efficient and utilize devices with higher efficiency e.g. water recycling, electrical appliance with a label number 5, LED	• Reduce operation costs e.g. electricity cost, maintenance cost • Reinforcement of positive image • Demonstrate good example and promote awareness among employees about energy conservation	Short – Long term
Energy Source	Promote the installation of solar PV in KTB's areas		

3.1.3 Scenario analysis of a prioritized physical risk and its impacts on Krungthai's own operation

Flooding is a prioritized item based on the likelihood considering the occurrences in the past. Analysis of flooding impacts were assessed through mapping flood depth exceedance with Krungthai physical asset's location. Data for flooding hazard was taken from the Aqueduct flood hazard map. Due to the data availability, only 2030 and 2050 were assessed under scenario SSP2-4.5 and SSP5-8.5. Assets which are flooded over a threshold of 0.5m are affected from flooding events. The damage from each asset were modelled using a damage function to represent the increase in severity with increase flood depth. The results of this assessment is shown in Table 5.

In 2030, the impact of flooding is expected to affect certain office buildings, branches, and ATM machines located in specifically high-risk areas. In general, the flood depth according to the flood hazards provided by the WRI does not exceed the set threshold. Those asset affected are generally flooded just above the threshold level and incur minimum damage.

In 2050, the number of bank's assets located in areas where the flood depth exceeds the 0.5m threshold will increase under SSP5-8.5 and incur higher damage from higher flood depth. Asset locations with significant risk will be specifically monitored and follow risk mitigation procedures that has been set in place. Although physical risk from flooding is deemed as most significant to Krungthai operation, the results from the assessment signifies that the impact is at a manageable level.

Table 5: Impacts on Krungthai's own operation from a prioritized physical risk

Scenario		Number of Branch Affected	Estimated Financial Impact	
			(Million THB)	(%)
Medium-term (2030)	Business as usual: SSP2-4.5	44	~ 22	~ 0.05%
	Pessimistic: SSP5-8.5	45	~ 22.5	~ 0.053%
Long-term (2050)	Business as usual: SSP2-4.5	44	~ 22	~ 0.029%
	Pessimistic: SSP5-8.5	72	~ 36	~ 0.047%

Remarks:

- The aqueduct flood hazard map by the World Resource Institute (WRI) is used to assess flood impact.
- Based on the location of 641 branches in Thailand.

3.1.4 Scenario analysis of prioritized transition risks and their impacts on Krungthai's own operation

Transition risk within Krungthai operations is relatively low compared to the credit portfolio. However, it does have an impact on the bank's reputation, which plays a crucial role in retaining existing clients and attracting new ones. As public awareness of climate and sustainability issues continues to grow, Krungthai recognizes the importance of implementing planned sustainability efforts to enhance its competitive advantage. By strengthening its sustainability initiatives, Krungthai aims to align with evolving societal expectations, and position itself as a leader in sustainable banking.

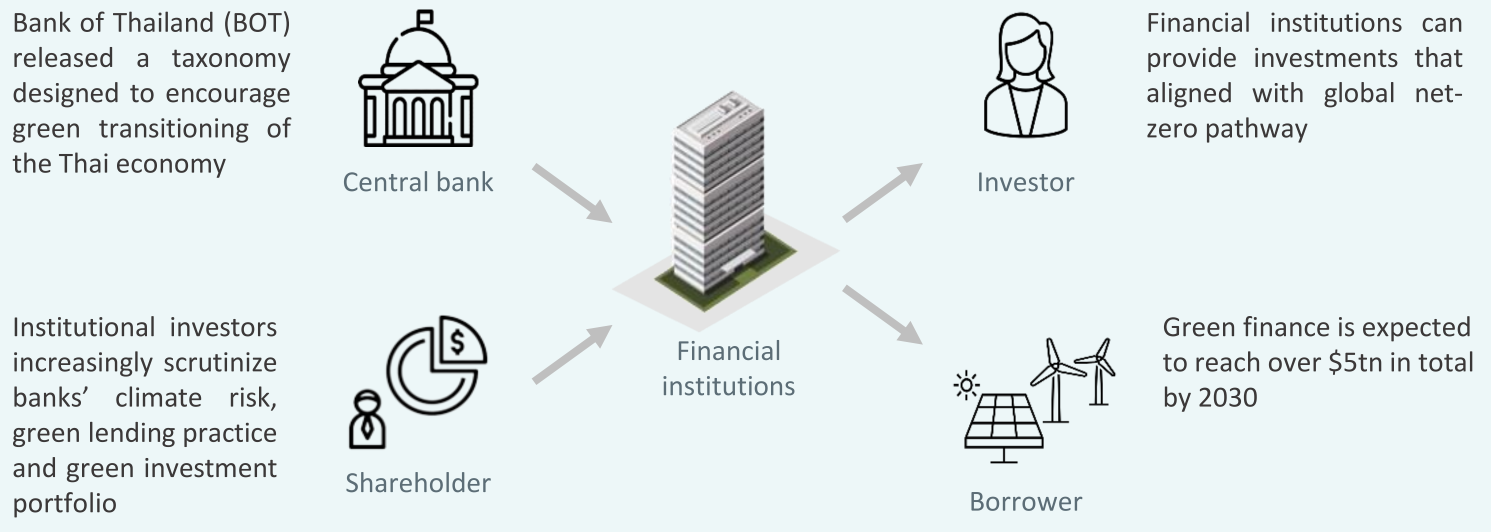
Krungthai has examined the regulatory and legal risks that may arise in different timeframes. It is anticipated that the implementation of upcoming regulations may occur in the long-term, providing sufficient time for preparation and adaptation to any evolving policy landscape. Krungthai is committed to conducting business in alignment with Thailand's climate ambition and expects to regulatory compliance risk to be minimal.

To fulfill our environmental responsibilities, we constantly explore opportunities to reduce operational emissions through new technologies, partnerships, and investments. However, investing in emerging technologies carries inherent risks due to their relatively less mature stage, which can lead to inefficient capital allocation.

In addition to our ongoing efforts, we bear the responsibility of driving the market transition towards a low-carbon economy. As the global trend increasingly leans towards greener business practices, it is crucial for our products to be adapted to meet changing client demands. Krungthai has proactively monitored these trends and is confident in our ability to adapt accordingly.

Finally, a study from the World Economic Forum in 2012 revealed that 25% of a company's market value can be directly attributed to its reputation. Building strong relationships with our stakeholders has always been at the forefront of our priorities. We have also examined various transition risk factors that can impact our reputation, including ensuring that our climate performance within the industry group remains at the highest level.

Figure 6: Stakeholders' expectations on financial institutions in Thailand's Net-zero journey



Type	Transition Risk	Timeframe			Impact Assessment Criteria	Impact
		S	M	L		
Policy & Legal Risk	**The government enforces carbon pricing instruments:** Since Thailand announced its ambition to achieve carbon neutrality by 2050 and net-zero greenhouse gas emissions by 2065, the proactive development of a climate change act and carbon pricing mechanism will serve as key instruments to drive nationwide mitigation actions.				These carbon pricing instruments will pose financial risk to Krungthai's business. To evaluate the impacts, the scenario analysis was conducted using Singapore's carbon tax case study.	Low
Technology Risk	**Increased investment budget in low-carbon technology**: Achieving our commitment towards Net-Zero will require substantial investment in decarbonization technologies. The timing of investment in decarbonization technologies such as electric vehicles (EVs) or high-efficiency equipment with varying degree of maturity will determine the effectiveness in capital allocation to reduce GHG emissions				To assess the impact of technology shift, the investments needed for different scenarios are assumed. • For the STEP scenario, it is assumed that decarbonization investments are not necessary unless they are already feasible. • For the APS scenario, in which the policy to tackle climate change is moderately intense, the cost of purchasing carbon credits is applied as investments for the Bank. • For the IEA NZE scenario, in which the policy to tackle climate change is highly intense, the cost of reforestation is applied as investments for the Bank.	Low
Market Risk	**Increasing consumer demand for green financing:** According to research from TheCityUK[1], the global green finance rises over 100 fold in the past decade. *"Global borrowing by issuing green bonds and loans, and equity funding through initial public offerings targeting green projects, swelled to $540.6 billion in 2021 from $5.2 billion in 2012, according to the research"*				*The share of green finance in the total finance market was about 4% in 2021, compared with around 0.1% in 2012.* Assuming the trend for green products continues, the share of green finance is expected to be high in 2030. Failure to adapt may pose in opportunity loss in capturing green financing market share.	High
Reputational Risk	**Pressured by rating score and benchmarking against other banks:** KTB may face reputational risks as a result of increased scrutiny from the public and investors regarding their actions to combat climate change. The public is demanding greater transparency from these companies about their greenhouse gas emissions, sustainability strategies, and transition plans to a low-carbon economy.				A study from the world economic forum in 2012 reveals that the 25% of a company's market value can be directly attributed to its reputation.	High

Table 6: Impacts on KTB's business from transition risks

3.1.5 Resilience strategy for Krungthai's own operations (Scope 1 & 2)

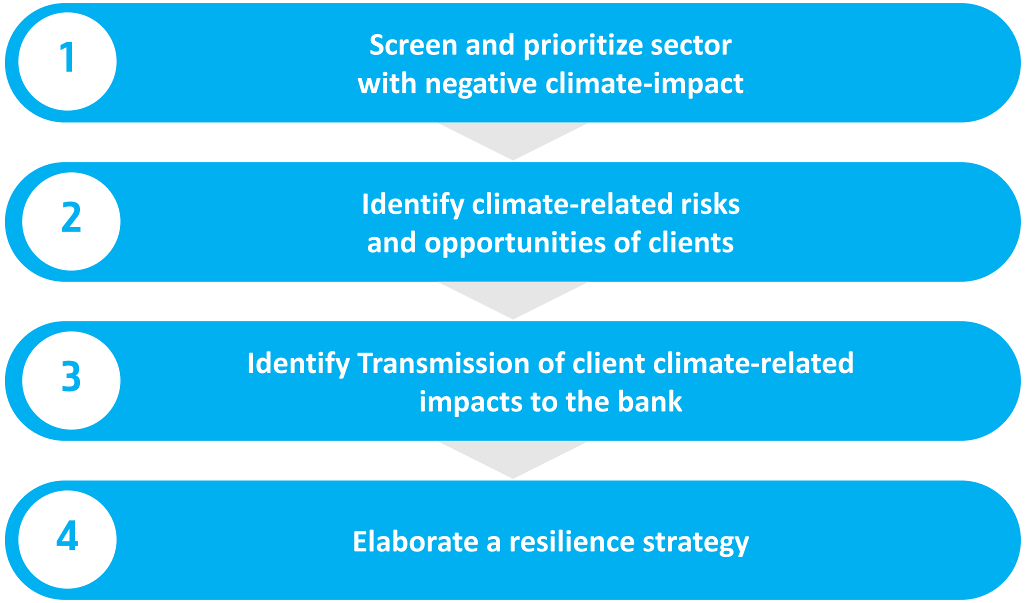
Target	5% * (Scope 1 & 2)	11% * (Scope 1 & 2)	16% * (Scope 1 & 2)	100% (Scope 1 & 2)
• KTB's Operations GHG Inventory (Scope 1 and 2)	**Scope 1 & 2** • Building retrofit • Installation of solar-powered field lights • Installation of solar PV • Replace Air-conditioner • Changing Fleets to EV car	**Scope 1 & 2** • Building retrofit • Installation of solar-powered field lights • Installation of solar PV • Replace Air-conditioner • Changing Fleets to EV car	**Scope 1 & 2** • Building retrofit • Installation of solar PV • Replace Air-conditioner • Changing Fleets to EV car	**Net Zero Emissions in Scope 1 & 2** • Changing Fleets to EV car • Renewable energy certificate • Carbon removal for residual emissions
2022 (Base year)	**2023**	**2024**	**2025**	**2030** (Long-term target)

* Reduction target align with SBTi methodology in own operation

3.2 Portfolio Climate Exposure and Green Products Solutions

As the financed emissions of the banking sector have a significant impact on total emissions when compared to its direct operational emissions, Krungthai has developed a comprehensive process for addressing financed emissions. The core outcome of this process includes identifying climate-related risks and opportunities of clients and translating any impacts into meaningful actions that the bank can undertake as part of its resilience strategy. This process is depicted in Figure 7.

Figure 7: Approach for identifying climate-related risks and opportunities of its clients and assessing their impacts on Krungthai's businesses



The approach for identifying and assessing climate-related risks and opportunity of Krungthai clients and any potential transmission of impact to the bank can be described as follows:

1. **Selecting high climate-impact sectors:** At Krungthai, we acknowledge the diverse and distinct impacts of climate change on various sectors. Recognizing this, we strive to fully grasp the climate risk context faced by our clients. In this regard, we have selected three key sectors, namely oil and gas, coal mining, and power and utilities, based on their substantial contributions to global greenhouse gas emissions. This deliberate selection enables us to prioritize and gain a deeper understanding of the transition risks affecting our clients in these sectors.

2. **Identifying climate-related risks & opportunities of clients:** Climate-related physical risks, transition risks, and opportunities specific to our clients in three sectors are identified for each timeframe through the consultation with external experts and from customer engagements from our relationship managers.

3. **Identifying climate-related impacts of clients on Krungthai's businesses:** In this step, Krungthai evaluates how climate induced event impact clients and how these could lead to credit risks.

4. **Elaborating a resilience strategy:** Through a detailed understanding of client risks and opportunities, as well as the potential impacts on the bank, we create a strategy to prioritize and tailor our assistance to clients, aiming to promote more sustainable practices by offering suitable green products and services. By doing so, we enhance the bank's resilience during the transition towards a low-carbon economy.

3.2.1 Identification of climate-related risks to Krungthai's clients

	Short-term	Medium-term	Long-term
Oil & Gas	**Demand reduction:** Increased maturity of new technologies such as EV or green hydrogen will directly impact the demand for traditional oil products especially in the transport sector.		
Oil & Gas		**Carbon Pricing:** The oil and gas will have profound impact by carbon tax if it poses a cost directly to the company or their end clients. Their products are carbon-intensive and may need to shift and provide new greener products.	
Oil & Gas	**Reputation:** The oil and gas sector faces reputational risks as a result of increased scrutiny from the public and investors regarding their actions to combat climate change. The public is demanding greater transparency from these companies about their greenhouse gas emissions, sustainability strategies, and transition plans to a low-carbon economy.		
Coal Mining	**Coal Demand:** According to global trends and national commitments, it is likely that coal especially for the purpose of generating electricity will decline rapidly. These will be from investment freeze in the short term and retirement of older coal plants in the medium term. In the long term coal demand is expected to be reduced drastically.		
Coal Mining	**Legal and Policy:** Coal mining in Thailand may face legal and policy risks due to increasing public awareness and concern over the environmental and social impacts of coal mining activities. In particular, the Thai government's efforts to transition towards a low-carbon economy may lead to stricter regulations and restrictions on coal mining operations in the country.		
Power Utilities	**Extreme Droughts:** Electricity generation from power plants require large amounts of water for cooling purposes which potentially could be in shortage during extreme drought events. Although power plants may have environmental impact assessment prior to building, the unpredictability of weather events may cause business disruptions.		
Power Utilities		**Carbon Pricing:** The power utilities will have profound impact by carbon tax if it poses a cost directly to the company or their end clients. Their products are carbon-intensive and may need to shift and provide new greener products.	

3.2.2 Identification of climate-related impacts of clients on Krungthai's businesses

Once the climate-related risks on clients' business are identified, further analysis of the impacts on clients' business will be conducted through three key dimensions, i,e, changes of demand, market impact, and carbon cost. Then, these will be translated to the impact's on KTB's businesses. The impact on KTB's business can be addressed in 5 components of KTB's risk framework, i.e. strategic risk, credit risk, market risk, liquidity risk, and operational risk as described in Figure 8.

Climate Risks

Physical Risks

- Extreme droughts
- Extreme storm and flooding
- Other extreme weather events

Transition Risks

- Policy and regulation changes
- Carbon pricing
- Increased maturity of new technologies
- Market advancement on greener products
- Reputation

Impacts on Clients

- Demand Increase
- Positive Market Impact
- Demand Reduction
- Negative Market Impact
- Carbon Cost

Impact's on KTB Businesses

Strategic Risk
Future strategy of KTB will be influenced by Thailand's Taxonomy

Credit Risk
- Defaults
- Collateral depreciation

Market Risk
Shifts in customer and investor preferences towards sustainability

Liquidity Risk
- Stranded assets
- Reduced access to funding sources

Operational Risk
Supply chain disruptions
Reputational damage and regulatory non-compliance

Figure 8: Identification of climate-related impacts of clients on Krungthai's businesses

3.2.3 Identification of climate opportunities on Krungthai's businesses

Type of Opportunity	Opportunities	Positive Impacts to Krungthai's Business	Timeframe of Opportunities
Product and Services	• Develop green financial products and services e.g. incentivized lending, consulting service • Develop new measurement tools that are beyond financial services e.g. carbon footprint calculation tool, impact transparency tool	• Enhancement of Krungthai's revenue and market value • Expand the customer and the share of green financing portfolio • Increase of business competitiveness	Short – Long term
Markets	Create a new market related to carbon mechanisms such as assuming the role of an intermediary or a developer of systems facilitating the trade of carbon credits		

3.2.4 KTB's resilience strategy – Green products and services

In today's rapidly changing world, marked by advances in technology, shifts in social structures, changes in consumption patterns, and the effects of climate change, the operations of banks and the businesses of their customers are impacted both positively and negatively. These factors are also interconnected with the overall economic system. Therefore, it is crucial for organizations to incorporate sustainability factors into their decision-making processes.

Krungthai, as a financial institution serving the Thai people, recognizes its role and responsibility towards society. The bank's vision, "Growing Together for SUSTAINABILITY", drives its efforts to integrate governance, social and environmental issues into its business processes.

Krungthai also adheres to national and international sustainable banking guidelines to promote a systematic transition to a low-carbon economy and build a quality society. By focusing on preventing negative impacts and promoting environmentally friendly business practices, the bank aims to support its customers, partners, employees, and shareholders in meeting these challenges while creating new business opportunities through the development of innovative financial products and services.

Being ready to manage risks and to seize the opportunity to develop a sustainable future
(restructuring the Bank's products and services, loans and new portfolio customers)

Supporting customers to transition to a low-carbon economy and society
(funding and providing consultation regarding green financing)

Innovations for All | **Carbon Credit Trading Platform**

Large Corporates
- Green bonds
- ESG-linked Derivatives

SMEs
- Business loans for energy and environment conservation
- Loans for the modification of machinery and equipment
- Environmental Credit
- Green loan for innovations

Personal
Home for cash
- Solar rooftop
- EV charger
- High-efficiency electrical appliances

Figure 9: Krungthai's green products and services

Loans for environmentally friendly businesses

Krungthai recognizes its crucial role as a commercial bank in driving the financial mechanism for the transition to a circular economy system. As part of its commitment to managing operational risks, the bank has developed a Sustainability Credit Framework.

Moreover, Krungthai is dedicated to creating shared values with customers and entrepreneurs of all sizes, by providing credit support to environmentally friendly businesses. The bank also strives to develop innovative products, services, and financial solutions that promote the transition to a low-carbon society.

- Solar power generation
- Biofuel production
- Electric vehicles and electric vehicle parts
- Wastewater treatment
- Recycling old products
- Recycling used materials
- Future Food such as functional food, organic, plant-based food, enriched drink

Environmental Products and Services

For Corporate Clients	**ESG-linked Derivatives:** Krungthai offers derivatives that support sustainable business development. In collaboration with partners such as PTT and PPTEP, we work towards reducing environmental problems, supporting community growth, and promoting good corporate governance within our organization. By meeting their ESG performance goals, customers can lower their risk management costs.
For SME Clients	**Environmental Credit (Green Credit):** The Bank provides loans to invest in waste treatment systems in businesses with fixed interest rate of 3% per annum throughout the contract term. **Business Loans for Energy and Environment Conservation:** We offer loans and renewable energy credits for the installation of solar rooftop systems with high credit limits and flexible repayment terms of up to 10 years. Our financing options require no collateral, making it easier for our customers to adopt sustainable energy solutions. **Loans for the modification of machinery and equipment:** We encourage entrepreneurs to explore funding opportunities that can help them upgrade their machinery and equipment in order to increase production efficiency and reduce greenhouse gas emissions. **Interest-Free Loans for Innovation:** We collaborate with the National Innovation Agency to provide loans that help businesses enhance their competitiveness through technology and innovation.
For Individual Clients	**Home for Cash: Save the World:** To support the installation of energy-saving devices in households, such as: • Solar rooftop installation • Installation of EV chargers for electric cars • Purchase of the energy saving electrical appliances

Krungthai Bank and the Office of Natural Resources and Environmental Policy and Planning (ONEP) have signed a Memorandum of Understanding (MOU) to **support financial measures for businesses to reduce greenhouse gas emissions**. The agreement aims to assist businesses in accessing funding sources for the purchase of machinery and equipment to increase production efficiency and reduce greenhouse gas emissions. ONEP will provide technical support to measure the amount of greenhouse gas emissions reduced from business activities, as well as provide carbon credit information and information on funding sources for businesses.

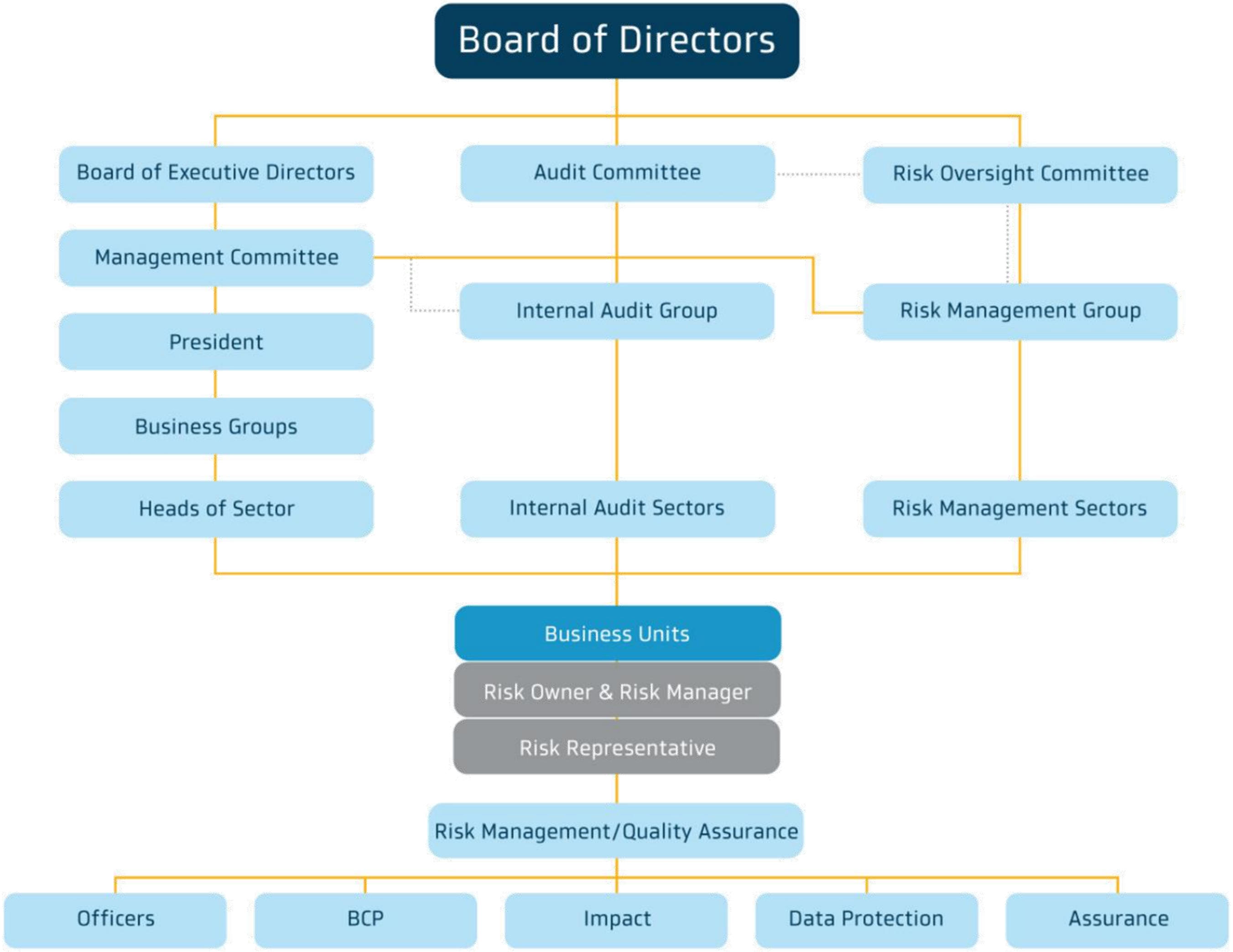
Krungthai Bank and the Industrial Estate Authority of Thailand (IEAT) have signed a memorandum of understanding to **support the funding for energy conservation, alternative energy, and renewable energy initiatives in order to reduce greenhouse gas emissions**. The agreement also aims to support SMEs operating within the industrial estates to access funding sources for improving their business performance, increasing production efficiency, and upgrading machinery and management systems to reduce energy and resource consumption. The partnership supports the government's vision for sustainable economic development through the Bio-Circular-Green Economy (BCG) model."

4.1 Krungthai's Risk Management Organization Structure

Krungthai has structured its organizational framework by placing a strong emphasis on risk management, implementing a clear separation of inspection duties and roles within the management committees to balance powers and maintain operational independence. Risk management staff are appointed to oversee risk management at the agency level, as illustrated in Figure 10.

Krungthai is committed to managing the impacts and risks associated with the loans it supports. To achieve this, the bank has developed guidelines for responsible lending, which integrate considerations of environmental and social risks into credit and investment underwriting processes. In addition, Krungthai has adopted internationally recognized frameworks for sustainable project finance, such as the Equator Principles and the environmental and social performance standards of the International Finance Corporation (IFC). These frameworks provide a robust approach to considering various types of loans and investments, including project finance and corporate finance, and enable the bank to ensure that it operates in a socially and environmentally responsible manner.

Figure 10: Krungthai's risk management organization structures



4.2 How climate-related risk are integrated into Krungthai's overall risk management

Amidst the rapidly evolving financial landscape, commercial banks are confronted with a multitude of challenges in their business operations. Among these challenges, one of the most intricate and consequential risks is Environmental, Social, and Governance (ESG) risk. In response to this pressing concern, our Bank has taken proactive measures to fortify its risk management framework by explicitly addressing ESG risks. With a comprehensive risk management plan now in place, our organization is poised to effectively identify, assess, and mitigate ESG risks, reaffirming our commitment to sustainability and responsible business practices.

Krungthai's Enterprise Risk Management process entails two distinct levels: the organizational level and the operational level as shown in Figure 11. The 8-step risk management process encompasses the following key stages:

1. Internal environment analysis: Internal factors are analyzed to develop the direction of the Bank's risk management framework such as risk appetite and risk tolerance.

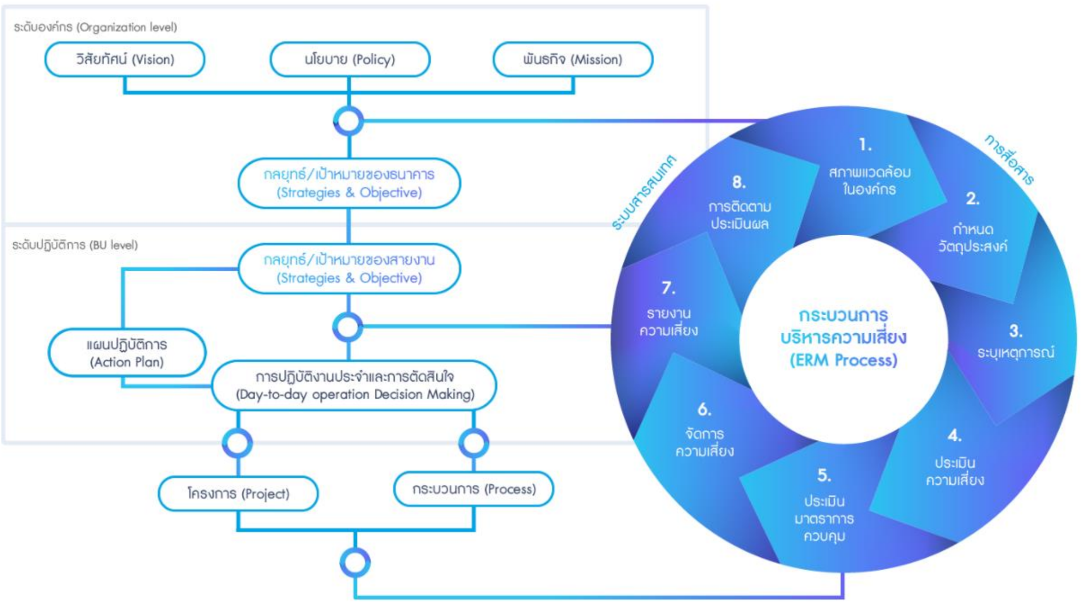
2. Objective Setting: By defining the its business goals and long-term strategic direction, the bank can establish a clear objective for risk management process, employing the "SMART" principle—Specific, Measurable, Attainable, Relevant, and Timely

3. Event/Risk Identification: At this stage, a risk owner provides inputs on key risk drivers, including environmental, social, and governance (ESG) factors, as well as climate-related events that may impact the bank as either risks or opportunities. They also identify the root cause of these events.

4. Risk Assessment: The likelihood of risk occurrence and the impact of events are assessed together to determine the inherent risk level. The assessment comprehensively evaluates two primary dimensions: likelihood and impact.

5. Risk Control Assessment: Mitigation measures are addressed and control levels are evaluated to ensure their effectiveness in managing risks.

Figure 11: Krungthai's Enterprise Risk Management Process



6. Risk Response and Risk Mitigation: Once a risk is identified, there are four possible responses: acceptance, reduction, sharing, or avoidance. Based on the specific nature of the risk, a response and mitigation plan will be developed to ensure the risk remains within acceptable tolerance.

7. Risk Reporting: The risk owner will communicate the risks along with the likelihood, impact and mitigation measure to the risk oversight committee and/or the board depending appropriate to the risk level for further approval.

8. Monitoring and Evaluation: The risk management practice will be monitored and evaluated to assess the effectiveness of mitigation measure and to strengthen the risk management framework in the future

4.3 Credit Risk Management: ESG Integration in Loan Screening and Loan Review Process

At Krungthai, we have established a clear list of loan types that we do not support due to their negative environmental impact, referred to as the Exclusion List. In contrast, we actively promote environmentally-friendly business practices and aim to create societal value. To facilitate this, we have developed credit approval guidelines for industries that align with our sustainability objectives, known as the Inclusion List. These guidelines are regularly monitored and reviewed to ensure that the context is up to date. Furthermore, we have sector-specific guidelines for credit approval in specific industries or for high-risk customers, known as the Sector-Specific Guidelines. These lists and guidelines form our initial screening before a secondary ESG assessment is performed.

The Bank incorporates ESG issues into its credit approval process for project loans, business loans, personal loans, and investments. ESG issues are assessed based on predetermined criteria to evaluate potential risks and their impacts. The Bank monitors credit limits and line utilization according to specific objectives and conditions. Credit reviews are conducted periodically to ensure that clients are taking effective steps to manage ESG issues and comply with requirements throughout the duration of their credit lines.

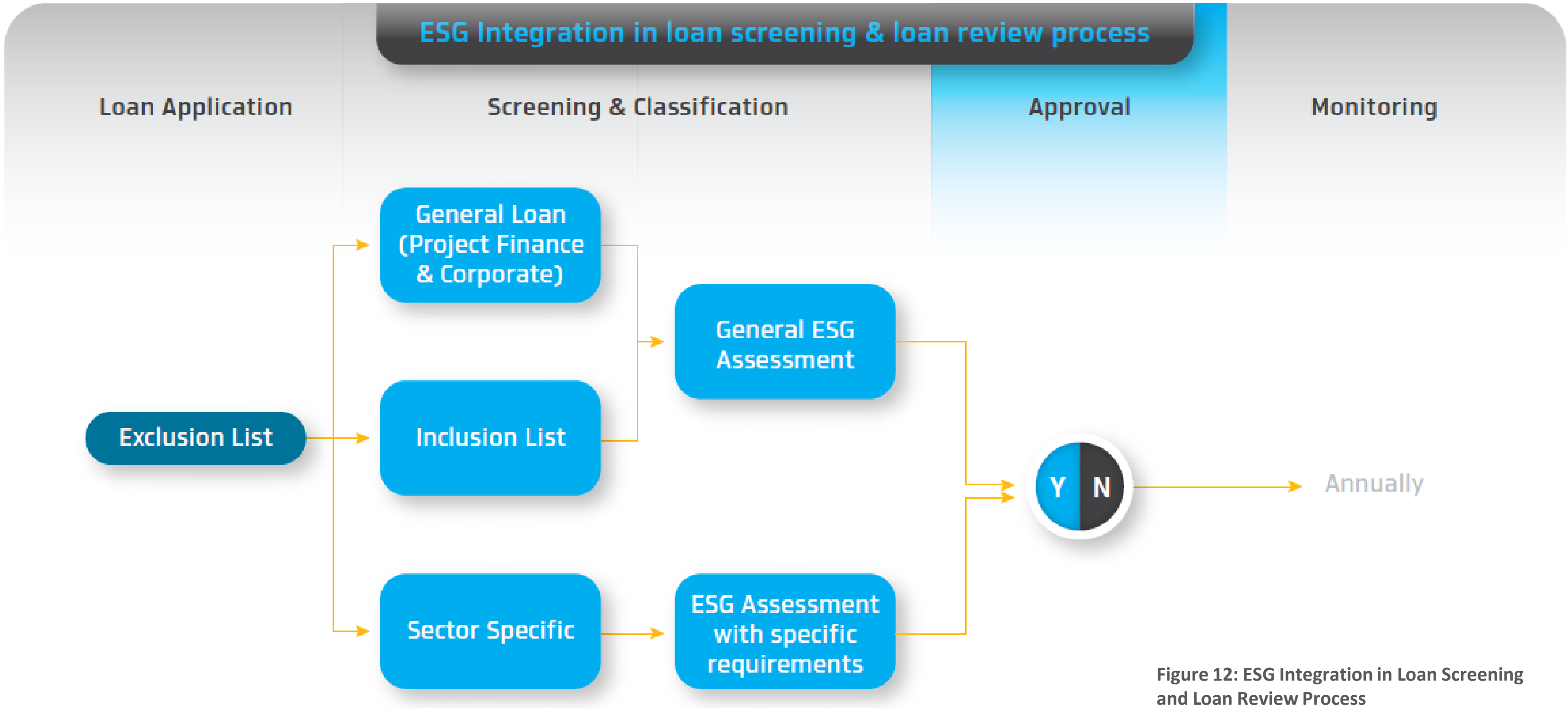


Figure 12: ESG Integration in Loan Screening and Loan Review Process

Inclusion List	Exclusion List
1. Healthcare industry comprises businesses involved in medical equipment manufacturing, pharmaceutical and medical product manufacturing, as well as laboratory services. 2. Private Hospital Industry 3. Electric vehicle industry and parts for electric vehicles 4. Food industry for the future: functional food, organic, plant-based food, enriched drink 5. Solar power plant industry or friendly alternative energy with the environment	1. Illegal business 2. Businesses or projects that have a negative impact on the environment, ecosystems, cultural conservation areas, or important ancient sites. 3. Trade in wildlife and wildlife products 4. Business that are hoarding products for the purpose of speculation 5. Business related to the production or trade of weapons of war 6. Business related to human rights violations 7. Businesses or projects that have significant impact to environment and society 8. Business that are engaged in direct and indirect lobbying activities

5.1 Climate-related Metrics: Own Operations

GRI Standards	Requirements	Unit	2019	2020	2021	2022
	Total GHG emission (scope1 and scope2)	$TonneCO_2e$	67,090	64,420	56,861	56,815
GRI 305-1(a)	Direct (Scope1) GHG emission	$TonneCO_2e$	14,448	14,423	12,096	14,691
	- Stationary combustion	$TonneCO_2e$	20	25	21	37
	- Mobile combustion	$TonneCO_2e$	12,408	11,901	9,532	10,149
	- Biogenic combustion	$TonneCO_2e$	642	615	486	613
	- Fugitive	$TonneCO_2e$	1,378	1,882	2,057	3,892
GRI 305-2(a)	Energy indirect (Scope2) GHG emission	$TonneCO_2e$	52,642	49,997	44,765	42,124
GRI 305-3(a)	Other (Scope3) GHG emission	$TonneCO_2e$	26,222	28,231	26,759	43,292
	- Purchased goods and services	$TonneCO_2e$	773	2,510	2,219	1,873
	- Fuel- and energy-related activities	$TonneCO_2e$	48	43	24	20
	- Business travel	$TonneCO_2e$	349	108	17	140
	- Employee commuting	$TonneCO_2e$	NA	NA	NA	18,050
	- Leased assets	$TonneCO_2e$	25,052	25,570	24,499	23,209
GRI 305-4(a)	GHG emission intensity	$TonneCO_2e$/FTE	3.17	3.18	3.00	3.31

Krungthai has placed high emphasis to ensure that the bank operation aligns with the Paris Agreement. To reflect our endeavors, Krungthai is now committed to reach net-zero in 2030. These targets are beyond Thailand's current target (2065) which shows our dedication towards environmental issues. Despite our ambitious targets, we are still striving to accelerate our net-zero timeline through exploring opportunities from evolving technology and market opportunities.

We constantly monitor our progress towards our targets through a rigorous data collection of operation activities. Krungthai's GHG emissions are calculated based on the GHG Protocol Corporate Accounting and Reporting Standard. Emission factors used for the calculations are taken from the Thailand Greenhouse Gas Organization (TGO) and IPCC. We have also sought assurance of our GHG inventory by a third party in accordance with the GRI Standards (AA1000AS) to confirm the validity of our numbers.

Remarks:

- The amount of greenhouse gas emissions analyzed according to the GHG Protocol covers greenhouse gas emissions in scope 1, 2 and 3 (excluding category 15 emission from investment).
- The amount of greenhouse gas emissions is calculated from the amount of Activity Data that cause the greenhouse gases multiplied by the Emulsion Factor, referring to the Thailand Greenhouse Gas Management Organization (Public Organization) and IPCC Sixth Assessment Report.
- Direct (Scope1) GHG emission covers stationary combustion, mobile combustion, biogenic combustion and fugitive emission activities.
- Fugitive emission covers refrigerant leaks, extinguishing from fire drills and fire evacuation drills and septic tank by calculated from the number of employees working in the area.
- Energy indirect (Scope2) GHG emission calculated from the activity of electricity purchased.
- Purchased goods and services calculated from the water consumption and paper used within the organization.
- Fuel-and energy-related activities calculated from electricity and liquid petroleum gas which sold to the restaurant in the Nana Nua Building.
- Business travel calculated from the activities of employees traveling by passenger aircraft for business purposes.
- Employee commuting calculated from travel activities of employees to work in the area. The data was started collecting in 2022.
- Leased assets calculated from electricity consumption activities in the leased area for service of electronic devices used outside the organization, such as Automatic teller machine, Cash deposit machine and Passbook Update Machine, including other electronic devices for these devices but does not include the power from the regulator in the leased area.
- GHG emission intensity is the ratio of greenhouse gas emissions (Scope1 and Scope2) to full-time equivalent (FTE), by using 2020 as the base year.

5.2 Climate-related Metrics: Financed Emissions

The majority of emissions from financial institutions fall under the GHG protocol's categorization of scope 3 emissions from investments. These emissions are considered indirect and result from the bank's lending and investments, contributing to greenhouse gas emissions.

Krungthai adheres to international best practices in calculating and reporting financed emissions by following the Partnership for Carbon Accounting Financial (PCAF) standard. Whenever possible, Krungthai seeks to utilize the highest level of accuracy in emission data, relying on our clients' public disclosures. However, in cases where such data is unavailable, emissions are estimated based on client operating sector and revenue data. The data quality of our financed emissions is assessed and weighted according to the PCAF methodology.

Moving forward, Krungthai aims to enhance data quality to ensure confidence in assessing clients' environmental impact and identify areas where the bank can provide support and assistance.

Sector	2021			2022		
	Scope 1 & 2 (million tCO_2e)	Scope 3 (million tCO_2e)	Data Quality [1]	Scope 1 & 2 (million tCO_2e)	Scope 3 (million tCO_2e)	Data Quality [1]
Power and Utility	4.09	0.49	3.27	3.95	0.89	2.45
Oil and Gas	1.68	3.96	1.80	1.08	5.31	1.54
Coal Mining	0.74	-	1.95	0.50	-	4.00
Total Financed Absolute Emissions	**6.51**	**4.45**		**5.52**	**6.20**	

Remarks:

1. Emissions and Weighted Data Quality Score are calculated according to the PCAF Standard with score 1 signifying the highest data quality and score 5 signifying the lowest data quality.

5.3 Climate-related Metrics: Targets

Krungthai Net-Zero Goals

We are pleased to announce that our bank is committed to achieving net-zero by 2065. We recognize the urgent need to address the challenges of climate change, and we are taking steps to reduce our environmental impact. To ensure that our net-zero commitment has high environmental integrity, we have followed the guidelines and recommendation set forth by the science-based target initiative. Doing so, we believe that we could make our operations targets align with the minimum ambition necessary to limit the global warming to 1.5°C above pre-industrial level determined by the latest climate science.

According to the guidelines, we have set our near-term target in 2030 to achieve net zero in own operation (scope 1 & 2) from our baseline in year 2022. Following our near-term target, we will reduce our emissions to net-zero by offsetting any residual from carbon removal. Since net-zero targets are far in the future in the business timescale, we have put in place a roadmap and targets for different measures to ensure that our emissions in scope 1 and scope 2 are heading towards the correct trajectory.

Furthermore, We are committed to achieving the NET zero target by 2065 across all scopes, following Thailand's Long-Term Low-Emission Development Strategy (LT-LEDS).

Net Zero Goals

2030 Goals

Net zero in own operation

2065 Goals

Net zero in own operation & financed emissions