

CLIMATE CHANGE REPORT

GSB Climate Report

Government Savings Bank

Table of Contents

Governance	4
1 Board of Directors	5
1.1 Roles and Responsibilities	5
1.2 Reporting	8
1.3 Board Competencies	8
2 Subcommittees / Working Groups	9
Roles and Responsibilities	9
3 Units	11
Roles and Responsibilities	11
4 Board Remuneration	12
Strategy	13
1 Identification of Climate Change – Related Risk and Opportunity Drivers	14
1.1 Physical Risk Drivers	15
1.2 Transition Risk Drivers)	16
1.3 Transition Opportunity Drivers	19
2 Scenario Analysis and Quantitative Assessment of Financial Impacts	22
2.1 Overview of Scenario Models	23
2.2 Scenario Models Selected by the Bank	23
2.3 Approach to analyzing risks and opportunities under climate change scenarios	24
3 Results of the Scenario Assessment	26
3.1 Physical Risks	26
3.2 Transition Risks	29
3.3 Management and Mitigation Approaches	32
3.4 Transition Opportunities	33
4 Climate Change Strategy Implementation Projects	35

Risk Management **37**

1	Climate Change Risk Management Process	38
1.1	Risk Identification	38
1.2	Risk Assessment	39
1.3	Risk Adaptation and Mitigation	39
2	Sources of Data for Climate Change Risk Assessment and Risk Management	40
3	Integration of Scenario Modelling into Climate Change Risk Management	41

Indicators and Targets **42**

1	Greenhouse Gas Emissions Inventory	43
1.1	Reporting Scope	43
1.2	Calculation of the Bank's Greenhouse Gas Emissions	43
2	Commitment to Achieving Net - Zero Greenhouse Gas Emissions	46
2.1	Action Plan Toward Net - Zero Emissions	46
2.2	Projects and Practical Implementation Measures	49





Governance

GSB places great importance on climate change governance to ensure effective management of climate - related risks and opportunities, aligned with the Bank's overall strategy. The Bank has designated **GSB Board of Directors** as the highest governing body overseeing climate - related matters, integrating climate considerations into its overall corporate governance framework. **The Governance and Sustainability Committee** is responsible for monitoring the progress of climate-related initiatives and reporting to GSB Board quarterly. The Committee plays a key role in supporting the Bank's transition to a climate-resilient, low-carbon business model. In addition, **the relevant committees** are responsible for reviewing and supporting the allocation of necessary resources to ensure that the Bank can effectively achieve its climate-related goals. At the operational level, relevant internal units collaborate closely to drive implementation and engage with both internal and external stakeholders to address climate - related issues comprehensively throughout the value chain. The governance structure is illustrated in [Figure 1](#).

Figure 1: Overview of the Climate Change Governance Structure



1. Board of Directors

1.1 Roles and Responsibilities

GSB Board of Directors plays a vital role in setting the Bank's direction and supporting its sustainability initiatives. The Board is responsible for reviewing and approving policies, governance frameworks, and action plans related to sustainable development, including matters that may affect climate change. This ensures that the Bank's operations align with its environmental, social, and governance (ESG) objectives. Details of the Board's roles and responsibilities in overseeing climate-related matters, as well as the frequency of monitoring and reporting, are presented in [Table 1](#).

Table 1: Roles and Responsibilities of the Committees

Committee	Roles and Responsibilities	Reporting Frequency
GSB Board of Directors 	• Oversee, consider, and review key sustainability issues. • Approve and support the implementation of sustainability strategies, targets, and action plans in alignment with the Bank's sustainability development policy, including matters related to climate change. • Monitor resource allocation to enhance the efficiency and effectiveness of operational processes. • Monitor progress in implementing strategies, targets, and action plans to ensure that performance aligns with established objectives.	–
Good Corporate Governance and Sustainability Committee 	• Review and approve sustainability policies, regulations, and criteria in accordance with environmental, social, and governance (ESG) principles for submission to GSB Board of Directors. • Participate in setting strategies, targets, and operational guidelines, including reviewing and approving the master plan for good corporate governance and sustainable development, as well as climate – related initiatives. The Committee also monitors progress and reports quarterly updates to GSB Board of Directors. • Promote sustainable operations to support the Bank's role as a social bank, including fostering long-term relationships and cooperation with all stakeholder groups. • Provide recommendations, measures, and key guidance related to sustainability development to GSB Board of Directors and the Bank's executives.	Report to GSB Board of Directors quarterly

Committee	Roles and Responsibilities	Reporting Frequency
Risk Oversight Committee 	• Establish overall risk management policies, covering risk assessment, monitoring, and oversight processes to ensure alignment with the Bank's appropriate risk appetite. • Review risk management policies and strategies, including the risk appetite levels, annually or whenever significant changes arise. • Approve the overall risk management system and performance measurement tools used to monitor and control various types of risks. • Report risk-related issues to GSB Board of Directors, including the effectiveness of risk management, key concerns, and gaps requiring corrective actions to ensure alignment with the Bank's risk management policies and strategies.	Report to GSB Board of Directors quarterly
Executive Committee 	• Review and provide recommendations on sustainability and climate - related policies and strategies, including the sustainable business plan, and submit these matters to GSB Board of Directors. • Review and approve investments, lending activities, and sustainable business operations as delegated by GSB Board of Directors. • Oversee and monitor investment and lending activities, as well as sustainable business operations, to ensure alignment with the Bank's plans and targets. • Review and assess strategic planning, budgeting processes, and the Bank's annual performance evaluation. • Monitor, provide feedback, and offer recommendations regarding the Bank's strategic planning and budgeting processes.	Report to GSB Board of Directors quarterly

1.2 Reporting

The Good Corporate Governance and Sustainability Committee, the Risk Oversight Committee, and the Executive Committee regularly report on climate – related initiatives and relevant performance outcomes, as presented in [Table 1: Roles and Responsibilities of the Committees](#).

1.3 Board Competencies

GSB has a clear framework for appointing members of the Board of Directors, selecting individuals with the appropriate qualifications, skills, knowledge, and expertise necessary to support the Bank’s operations and fulfill its mission. The appointment criteria are based on the guidelines of the State Enterprise Policy Office (SEPO), which require board members to possess core competencies and essential knowledge in four areas: finance, accounting, law, and information technology. In addition, ten specialized knowledge areas are identified, including social and environmental expertise, to ensure the Board can effectively oversee sustainability matters and climate-related risks and opportunities.

Beyond establishing qualification requirements, the Bank places strong emphasis on continuously enhancing the skills and understanding of its Board members. The Bank provides training programs related to sustainability governance in the environmental, social, and governance (ESG) dimensions, such as “ESG in the Boardroom: A Practical Guide for Board ESG”, which covers global ESG expectations and practices, including setting appropriate frameworks and strategies tailored to the organization, monitoring ESG performance, the Board’s governance role, and relevant domestic and international case studies. These initiatives reflect the Bank’s commitment to ensuring that the Board possesses the necessary competencies. Details of GSB Board members’ knowledge and expertise are summarized and presented in [Table 2](#).

Table 2: Qualifications of the Board of Directors

Table of Knowledge, Expertise, and Competency Groups	Specialized Knowledge and Expertise	Total
Core Competencies and Essential Knowledge	Finance	6
	Accounting	3
	Law	3
	Information Technology, Digital, and Innovation	5
	Banking	3
Management and Strategic Competencies	Risk Management	3
	Economics	5
	Business Administration	10
	Strategy and Development Planning	6
Other Competency Areas	Social and Environmental Issues	3



2. Subcommittees / Working Groups

Roles and Responsibilities

To reflect the Bank’s commitment to driving the organization toward becoming a sustainable business that is resilient to climate change and supports the transition to a low-carbon economy, which requires cooperation from officers at all levels and engagement from relevant stakeholders across the value chain, the Bank has established subcommittees and working groups composed of senior executives from relevant groups and divisions. Clear roles, duties, and responsibilities have been defined for each committee, enabling systematic governance and ensuring GSB operations are carried out efficiently and aligned with its strategic objectives.

Details of the roles, duties, and responsibilities of the committees and working groups involved in climate change governance, including the frequency of monitoring and performance reporting, are presented in [Table 3](#).

Table 3 : Roles and Responsibilities of Subcommittees / Working Groups

Committee	Roles and Responsibilities	Reporting Frequency
Management Committee	• Review and evaluate the Bank’s performance in various areas, including sustainability and climate - related matters. • Review and screen key issues such as policies, strategies, targets, and plans before submitting them to GSB Board of Directors for approval. • Oversee and monitor operations to ensure alignment with the policies, strategies, targets, and plans approved by GSB Board of Directors.	Report to the Good Corporate Governance Committee quarterly

Committee	Roles and Responsibilities	Reporting Frequency
Sustainability Development Committee 	• Review GSB sustainability framework, including policies, strategies, targets, and action plans aligned with the Sustainable Development Goals (SDGs), as well as climate strategies appropriate to the Bank's context. • Consider, decide, resolve issues, and provide directives to drive sustainability initiatives in accordance with international sustainability frameworks, such as the Principles of Responsible Banking (PRB), ESG principles, and the Triple Bottom Line approach to organizational growth. • Review and report on sustainability performance to the Good Governance and Sustainability Committee, providing comments and recommendations for improving the Bank's performance as appropriate.	Report to the Good Corporate Governance and Sustainability Committee quarterly
Eco-Efficiency Measurement and Evaluation Working Group 	• Establish policies and action plans, as well as oversee the Bank's operations to enhance eco-efficiency in alignment with ISO 14045 standards and the Bank's strategic direction. • Drive the Bank's performance in accordance with key performance indicators (KPIs) to enhance eco-efficiency, ensuring alignment with the performance evaluation agreement of the Bank. • Monitor and assess GSB's operational performance and report to GSB Board of Directors quarterly.	Report to the Good Corporate Governance Committee quarterly

3. Units

Roles and Responsibilities

To ensure that GSB's sustainability initiatives are implemented effectively and align with its environmental, social, and governance (ESG) objectives, the Bank has clearly defined the roles and responsibilities of all relevant units. Details of each unit's roles and responsibilities in overseeing climate-related matters, along with the frequency of monitoring and reporting, are presented in [Table 4](#).

Table 4: Roles and Responsibilities of Units

Unit	Roles and Responsibilities	Reporting Frequency
Sustainability Development Department 	• Develop and review GSB's sustainable development policies. • Promote and support relevant units in driving initiatives that align with the Bank's sustainable development framework. • Monitor GSB's sustainability performance, including climate-related initiatives, and present the results to executives and the Good Corporate Governance and Sustainability Committee.	Report to GSB Board of Directors quarterly
Other units 	• Analyze and develop targets and action plans that align with and support GSB's business plan, covering policies, strategic directions, and planning for sustainable development. This includes climate-related initiatives under the Bank's Net Zero Roadmap. • Monitor and evaluate the performance in accordance with the action plan, comparing progress against established targets.	Report to the relevant working groups monthly

4. Board Remuneration

The Bank has established clear remuneration rates and criteria for Board members, consisting of the following three components:

- 1 Monthly Remuneration (Based on the Cabinet Resolution dated 24 April 2019)
- 2 Meeting Allowance for GSB Board Meetings (Based on the Cabinet Resolution dated 24 April 2019): Board members receive a meeting allowance on a per-meeting basis, at a rate of 0.5 times the meeting allowance of GSB Board. Only members who attend the meeting are eligible. In addition, GSB Board members may receive meeting allowances for subcommittees or other working groups, limited to 2 committees and 1 meeting per committee per month.
- 3 Board Bonus: Paid based on the Bank's performance, determined by net profit and the performance evaluation results under the performance assessment agreement between GSB and the Ministry of Finance.





Strategy

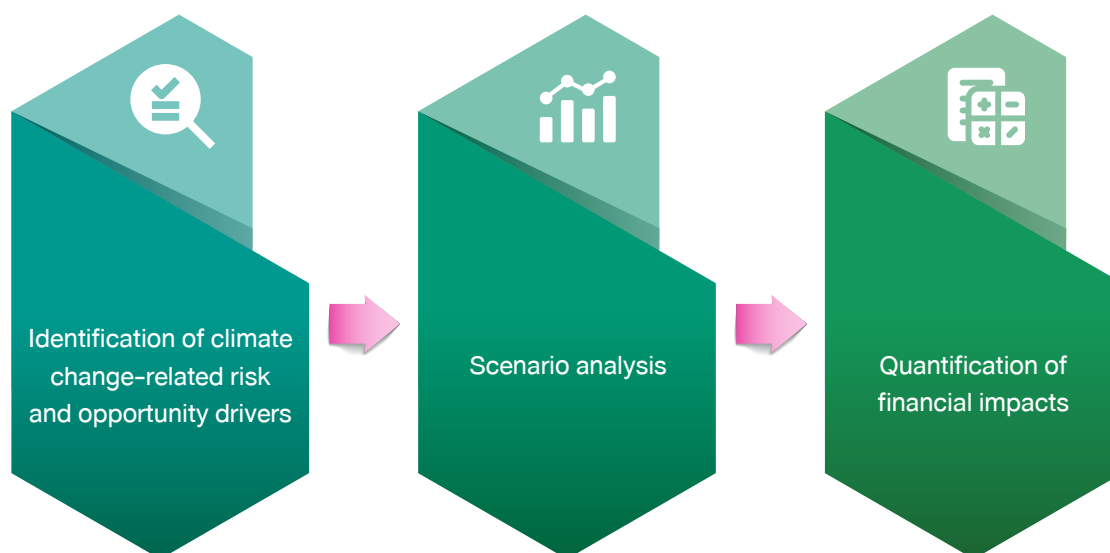
The Bank recognizes the urgency of the climate crisis, which continues to have widespread impacts on the global economy and society. The Global Risks Report 2025, published by the World Economic Forum (WEF), identifies extreme weather as one of the most significant global risks in both the short and long term. This reflects an escalating severity trend that could lead to irreversible tipping points if adequate mitigation measures are not implemented.

The Bank has therefore developed a systematic climate change strategy by conducting assessments of related risks and opportunities through scenario analysis in accordance with the Task Force on Climate-related Financial Disclosures (TCFD) framework. The Bank monitors performance and reviews information in line with the International Financial Reporting Standards S2: Climate-related Disclosures framework to ensure an effective response to change. The analysis results are used to formulate strategic directions, including the appropriate allocation of resources to support the transition.

The Bank has integrated climate-related considerations into its overall strategic planning and enterprise risk management processes, enabling a comprehensive assessment of potential impacts on its business model, value chain, and financial position. The strategy is regularly monitored, evaluated, and reviewed to maintain resilience and adaptive capacity.

In addition, the Bank has set a target to reduce greenhouse gas emissions by at least 50% by 2030 and across its entire value chain by 2050 (base year 2021), in accordance with the Science Based Targets initiative (SBTi), to support limiting the global temperature increase to no more than 2°C above pre-industrial levels, in line with established climate science principles. The Bank has also established an approach for assessing climate change–related risks and opportunities, as illustrated in Figure 2.

Figure 2: Framework for Assessing Climate Change–Related Risks and Opportunities

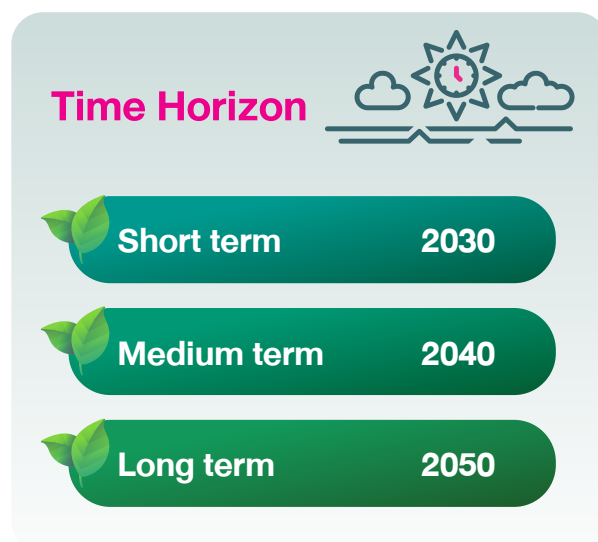


1. Identification of Climate Change – Related Risk and Opportunity Drivers

The Bank conducts a qualitative assessment of climate-related risks and opportunities to analyze the potential impacts on its operations, reputation, and long-term revenue. This assessment covers external factors that may affect business continuity and financial stability, such as extreme weather events, regulatory changes, and shifts in consumer behavior in response to environmental trends.

In terms of risks, the Bank recognizes the impacts of climate change, which may lead to extreme weather events that disrupt lenders' business operations, resulting in revenue losses and increased costs arising from investments in recovery and preventive measures against such disasters. These impacts may affect borrowers' competitiveness and debt-servicing capacity. Therefore, assessing climate change–related risks and opportunities enables the Bank to manage risks appropriately, create business opportunities, and strengthen its market leadership, thereby enhancing competitiveness and supporting sustainable growth.

Figure 3: Risk Time Horizons



The impacts arising from climate-related risks are categorized into three time horizons: short term (2030), medium term (2040), and long term (2050). In the short term, acute physical risks, such as flooding, may affect customers' debt-servicing capacity and the continuity of services at bank branches located in affected areas. Transition risks, meanwhile, may stem from government policies and regulations that prioritize addressing climate change, such as the Climate Change Act and the Thailand Taxonomy, which require certain business customers to invest in adaptation. The Bank must closely monitor and assess these risks to evaluate potential impacts over the medium term (2040) and the long term (2050), and to review and manage its roadmap to ensure that its plans are aligned with the national context, global directions, and practical implementation. This will support the Bank's transition toward achieving its Net Zero target by 2050. Climate-related risks the Bank may face include rising sea levels; more frequent and severe extreme weather events; the adequacy of clean energy supply; and increasing carbon tax rates or other additional measures, all of which may affect business cost structures and, in turn, the operations of both the Bank and its customers.

1.1 Physical Risk Drivers

Table 5: Physical Risk Drivers

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Acute Risks	Increasing severity of extreme weather events, such as landslides, flooding, and heat stress	Short to long term	- Operational disruptions leading to revenue losses (e.g., supply chain delays, asset damage, etc.) - Higher expenses and increased investment required for prevention, mitigation, and recovery from the impacts of natural disasters	- Assessing and analyzing risks arising from natural disasters, and developing mitigation strategies, emergency response plans and the integration of risk tolerance levels (risk appetite) - Applying risk assessment standards as criteria in the credit approval process

● GSB's own Operation ● Lending and Investment Portfolio ● Both

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Chronic Risks	- Changes in rainfall patterns and greater variability in weather conditions - Rising average temperatures	Long term	- Decline in the value of debtors' assets due to damage from climate-related natural hazards - Damage to agricultural output resulting from flooding events - Reduced agricultural productivity among debtors in the agricultural sector due to droughts and rising temperatures - Increased risk of write-offs and asset impairment, potentially leading to non-performing loans (NPLs) and defaults	Assessing and analyzing long-term climate change risks, and developing risk management plans and adaptation strategies, such as the development of sustainable financial products and their integration into the enterprise risk management framework.

1.2 Transition Risk Drivers

Table 6: Transition Risk Drivers

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Policy and Legal	- Higher fees associated with greenhouse gas emissions - More stringent requirements for greenhouse gas emissions reporting	Short to long term	- Higher operating costs (e.g., carbon taxes, CBAM, and increased insurance premiums) - Asset write-downs, asset impairments, and early asset retirement to adapt to policy changes	Identification and assessment of impacts on industry sectors within the portfolio that are likely to be the first affected by carbon costs and the Carbon Border Adjustment Mechanism (CBAM)

● GSB's own Operation ● Lending and Investment Portfolio ● Both

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Policy and Legal	• Introduction of regulations and laws affecting existing products and services • Risk of legal action or litigation	Short to long term	● Increased expenses from fines and legal judgments and/or declining demand for products and services	• Establish policies to limit or phase out financial support for high greenhouse gas-emitting businesses, while promoting lending and investment in businesses aligned with the transition to a low-carbon economy. • Comprehensive engagement with debtors to define adaptation strategies aligned with environmental changes and credit approval policies
Technology	• Shifts from existing products and services to lower greenhouse gas emission alternatives • Costs associated with adopting low-greenhouse gas emission technologies	Medium to long term	● Write-downs or early retirement of existing assets ● Reduced demand for high-greenhouse gas-emitting products and services ● Higher costs from research and development of new or alternative low-carbon technologies ● Increased investment in technologies that help reduce carbon emissions, such as Carbon Capture and Storage (CCS) and Carbon Capture and Utilization (CCU)	• Monitoring advancements in low-carbon technologies and innovations, such as non-carbon refrigerants, hydrogen fuels, and carbon removal technologies • Support for research and development through relevant research institutions • Strategic planning for investment in emerging businesses and new technology projects

● GSB's own Operation ● Lending and Investment Portfolio ● Both

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
			● Costs associated with adopting low-greenhouse gas-emission technologies in operations or improving production efficiency	
Market	• Changes in customer behavior • Uncertainty in market signals • Rising raw material costs	Short to long term	● Declining demand for certain goods or services (e.g., coal mining and related services) due to changes in consumer behavior ● Increased costs arising from adjusting processes to comply with environmental standards, such as investments in carbon-reduction technologies or supply chain adaptation. ● Revaluation of asset values, such as fossil fuel reserves, land, and securities	• Development of new green financial products aligned with the net-zero greenhouse gas emissions targets of GSB • Engagement with debtors to collect and analyze market data
Reputation	• Certain industries perceived negatively • Growing concerns or negative feedback from stakeholders	Short term	● Increased difficulty in attracting and retaining officers ● Reduced access to new sources of financing (e.g., green bonds, green loans, etc.)	• Development of new green products aligned with the perspectives and expectations of key stakeholders

● GSB's own Operation ● Lending and Investment Portfolio ● Both

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
			Reputational risks and loss of investor confidence due to financial policies that are not aligned with ESG standards and environmental management practices.	- Establishment of credit policies, exclusion lists, and industry-specific guidelines, together with strategies to manage greenhouse gas emissions in high-emitting sectors - Setting growth targets for sustainable finance and investment

1.3 Transition Opportunity Drivers

Table 7: Transition Opportunity Drivers

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Resource Efficiency	- Adoption of more efficient transportation methods - Improvement of production and distribution processes to enhance efficiency - Promotion of recycling practices - Transition to more energy-efficient buildings - Reduction in water consumption	Short term	- Reduction in operating costs through efficiency improvements and cost savings, such as lower electricity costs from the grid and reduced reliance on fossil fuels - Increased value of fixed assets, such as certified energy-efficient buildings (e.g., LEED, BREEAM) - Improved employee health, safety, and well-being	- Development of strategies to enhance energy and resource efficiency, such as green buildings, energy-saving initiatives, and electricity-use reduction measures - Customer engagement to encourage reviews of operational and investment strategies, with a focus on efficient resource utilization - Initiation of programs to raise awareness of resource efficiency, both within and outside the organization

● GSB's own Operation
 ● Lending and Investment Portfolio
 ● Both

Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
Energy Sources	• Use of low-greenhouse gas emission energy sources • Leveraging supportive policies • Adoption of innovative technologies • Participation in carbon credit markets and renewable energy markets • Transition to distributed energy generation systems	Short term	● Reduction in operating costs (e.g., through the use of the most cost-effective greenhouse gas mitigation measures) ● Lower exposure to risks from rising fossil fuel prices ● Reduced greenhouse gas emission risks, resulting in lower sensitivity to carbon cost volatility ● Returns on investment from low-carbon technologies ● Improved access to financing (e.g., increased investor interest in low-carbon-emitting entities)	• Setting targets and objectives to increase the use of clean energy
Products and Services	• Design of products and solutions that support climate adaptation • Innovation and research to develop new products or services • Scalability of business operations • Shifts in consumer behavior	Short to long term	● Generation of additional revenue from the growing demand for low-carbon products and services ● Increased revenue from innovative products that support adaptation, such as sustainability-linked loans / bonds, green loans, and green bonds	• Offering green loans to support the use of renewable energy and environmentally friendly projects or properties • Exploring and designing low-carbon products or services

● GSB's own Operation ● Lending and Investment Portfolio ● Both

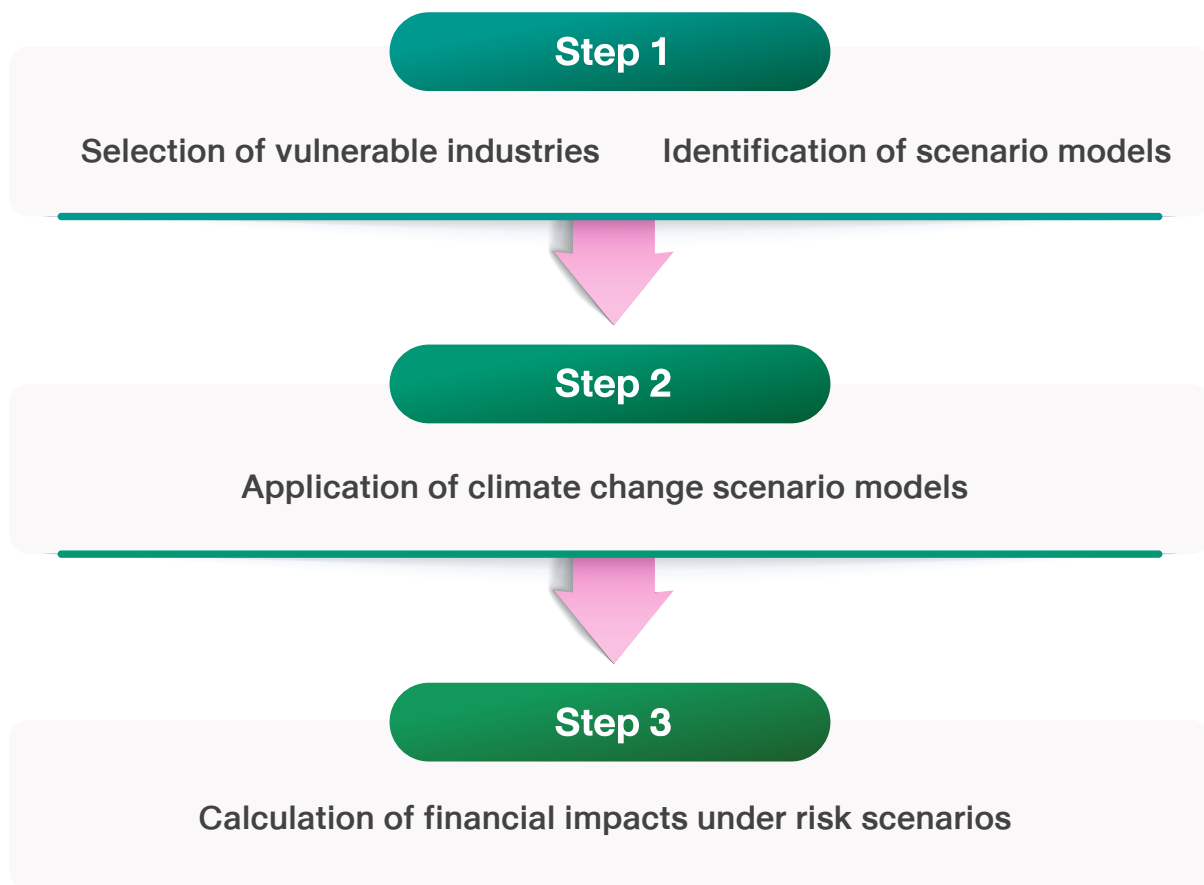
Types of Risks	Risk Drivers	Risk Time Horizons	Potential Impacts Across the Value Chain	Adaptation Measures to Mitigate Risks
			Enhanced competitiveness by responding to changing consumer behavior, leading to higher revenue	
Markets	- Entry into new and underdeveloped markets - Leveraging government incentives - Access to new assets and investment instruments requiring financial support	Short to long term	Increased revenue from access to new and growing markets, such as through collaboration with partners, government agencies, or other organizations	- Identification of new markets to promote sustainable finance and investment - Assessment of the Bank's capability to capture new opportunities and measurement of positive financial impacts
Resilience and Adaptive Capacity	- Participation in renewable energy projects and adoption of energy efficiency measures - Diversification of investment and lending portfolios	Short to long term	- Enhanced operational resilience and efficiency across a wide range of scenarios - Generation of additional revenue from offering new products and services related to climate change - Increased diversification of financial assets, such as green bonds, green loans, and investments in low-carbon infrastructure	- Assessment of the Bank's approach to prioritizing environmental and climate management - Analysis of both business risks and opportunities related to climate factors - Establishment of a climate governance and operational framework, promotion of workforce development, and implementation of data management systems to support climate-related management

● GSB's own Operation
 ● Lending and Investment Portfolio
 ● Both

2. Scenario Analysis and Quantitative Assessment of Financial Impacts

The Bank uses the results of its climate change-related risk and opportunity assessment as inputs to define future strategies and business plans, mitigate the potential impacts of climate change on the Bank and its stakeholders, and strengthen adaptive capacity and operational resilience across a range of possible future scenarios. In line with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, the Bank conducts a comprehensive quantitative and qualitative climate scenario analysis to assess potential impacts on its investment portfolio. The results of this analysis are applied to portfolio management strategies, encompassing both risk management and the identification of new business opportunities. The process for assessing financial impacts, as illustrated in [Figure 4](#), includes the identification of relevant climate scenarios, the selection of vulnerable industries, the application of scenario models, and the calculation of financial impacts.

Figure 4: Process for Assessing Financial Impacts from Climate Change–Related Risks and Opportunities



2.1 Overview of Scenario Models

The Bank conducts climate scenario analysis to assess risks that may affect the Bank in the short, medium, and long term, covering transition risks.

For transition risks, the Bank references scenarios developed by the Network for Greening the Financial System (NGFS), which are designed to assess the economic impacts and financial risks arising from climate change. The scenarios used to assess physical risks are based on those developed by the Intergovernmental Panel on Climate Change (IPCC), which reflect the physical impacts of climate change under different assumptions regarding increases in global temperatures.

2.2 Scenario Models Selected by the Bank



The Bank conducts climate change risk analysis by referencing widely recognized scenario models within the financial sector and taking into account Thailand's context, as presented in [Table 8](#).



Table 8: Climate Change Scenario Models Used by the Bank

	Scenario in which global temperature increase is limited to no more than 1.5°C	Scenario with severe physical risks
Hypothesis	Global warming is constrained to 1.5°C through stringent climate policies and technological innovation, achieving global net-zero carbon emissions by 2050.	Globally, only existing policies are implemented, resulting in high levels of physical risk.
Projected temperature in 2100	1.4 °C – 1.6 °C	3.0 °C – 4.5 °C
Physical risk scenario models	IPCC RCP 2.6	IPCC RCP 8.5
Transition risk scenario models	NGFS Net Zero 2050	NGFS Current Policies
Severity level of climate change	Low	High

2.3 Approach to analyzing risks and opportunities under climate change scenarios

The Bank analyzes the resilience of its power plant project loan portfolio, which is the Bank's most material portfolio. The analysis covers physical risks, transition risks, and transition opportunities. For risk assessment, the Bank focuses on coal-fired, natural gas-fired, and biomass power plants, which are the sources of greenhouse gas emissions associated with the Bank's high level of lending activities (financed emissions). In contrast, the assessment of transition opportunities emphasizes solar, hydropower, and biomass power plants, reflecting the expected future trend toward greater support for clean energy.

To enable a comprehensive assessment of potential impacts, this analysis covers three time horizons: short term (2030), medium term (2040), and long term (2050). Two extreme scenarios are applied to both physical and transition risks, as presented in [Table 9](#), to comprehensively assess potential impacts.

Table 9: Scenario-Based Risk and Opportunity Assessment Process

Drivers	Analytical Approach
Physical Risk – Flooding	The Bank applies the risk and opportunity assessment methodology of the UNEP Finance Initiative (UNEP FI), using the Intergovernmental Panel on Climate Change (IPCC) scenario models. Specifically, the IPCC RCP8.5 scenario is used to assess impacts under a scenario in which global temperatures rise by more than 4°C, whereas the IPCC RCP2.6 scenario is used to assess impacts under a scenario in which global temperature increases are limited to no more than 1.5°C by 2100. The Bank uses projected rainfall increases across Thailand's provinces to assess the increasing severity of flood risk. Based on Thailand's historical data, the Bank estimates that power plants may experience flooding-related operational shutdowns averaging 27.2 days per year, and uses this figure to calculate revenue losses from operational disruptions to determine the financial impacts on debtors.
Transition Risk – Carbon Pricing	The Bank applies the risk and opportunity assessment methodology of the UNEP Finance Initiative (UNEP FI), using the Network for Greening the Financial System (NGFS) scenarios “NGFS Current Policies” and “NGFS Net Zero 2050” to assess the impacts of rising carbon prices. The Bank assumes that both a Carbon Tax Scheme and a Cap-and-Trade Scheme will be implemented. The Bank references carbon price trajectories for 2030, 2040, and 2050 from NGFS scenario models, specifically those developed for Asian economies.
Transition Opportunity – Renewable Power Generation Market	The Bank applies the risk and opportunity assessment methodology of the UNEP Finance Initiative (UNEP FI), using the “NGFS Current Policies” and “NGFS Net Zero 2050” scenarios to assess opportunities arising from lending to renewable power plant projects in Thailand. The assessment takes into account multiple factors, including Thailand's Power Development Plan (PDP), the Thailand Taxonomy, and electricity generation cost data from the International Energy Agency (IEA). The Bank's assessment process covers both “market assessment” and “the Bank's capacity assessment” to identify the proportion of lending to renewable power plant projects over the short term (2030), medium term (2040), and long term (2050).

3. Results of the Scenario Assessment

3.1 Physical Risks

Climate change has affected economic systems and infrastructure across multiple sectors worldwide, particularly the energy sector, where power plants in many areas are increasingly exposed to intensifying natural hazards. To enhance preparedness and manage risks effectively, the Bank conducts climate-related risk scenario analysis focusing on flooding, a key physical risk that may disrupt power plant operations and affect the debt-servicing capacity of debtors in the energy sector.

3.1.1 Scope of Analysis

The scenario analysis for risk assessment covers three types of power plants in which the Bank has exposure through its lending activities (with outstanding loans as of the end of 2022), namely:



Coal-fired power plants



Natural gas-fired power plants



Biomass power plants

The analysis focuses on physical risks from flooding, which are among the key impacts that may arise from climate change. The impact assessment considers two main factors:



Rainfall levels

to assess the severity of flooding events in the areas where the power plants are located



Average number of flood-affected days

to estimate the duration during which power plants may be unable to operate under normal conditions

The assessment is conducted across three time horizons: (1) short term: 2030, (2) medium term: 2040, and (3) long term: 2050, using two climate change scenarios under the Representative Concentration Pathways (RCPs) framework:

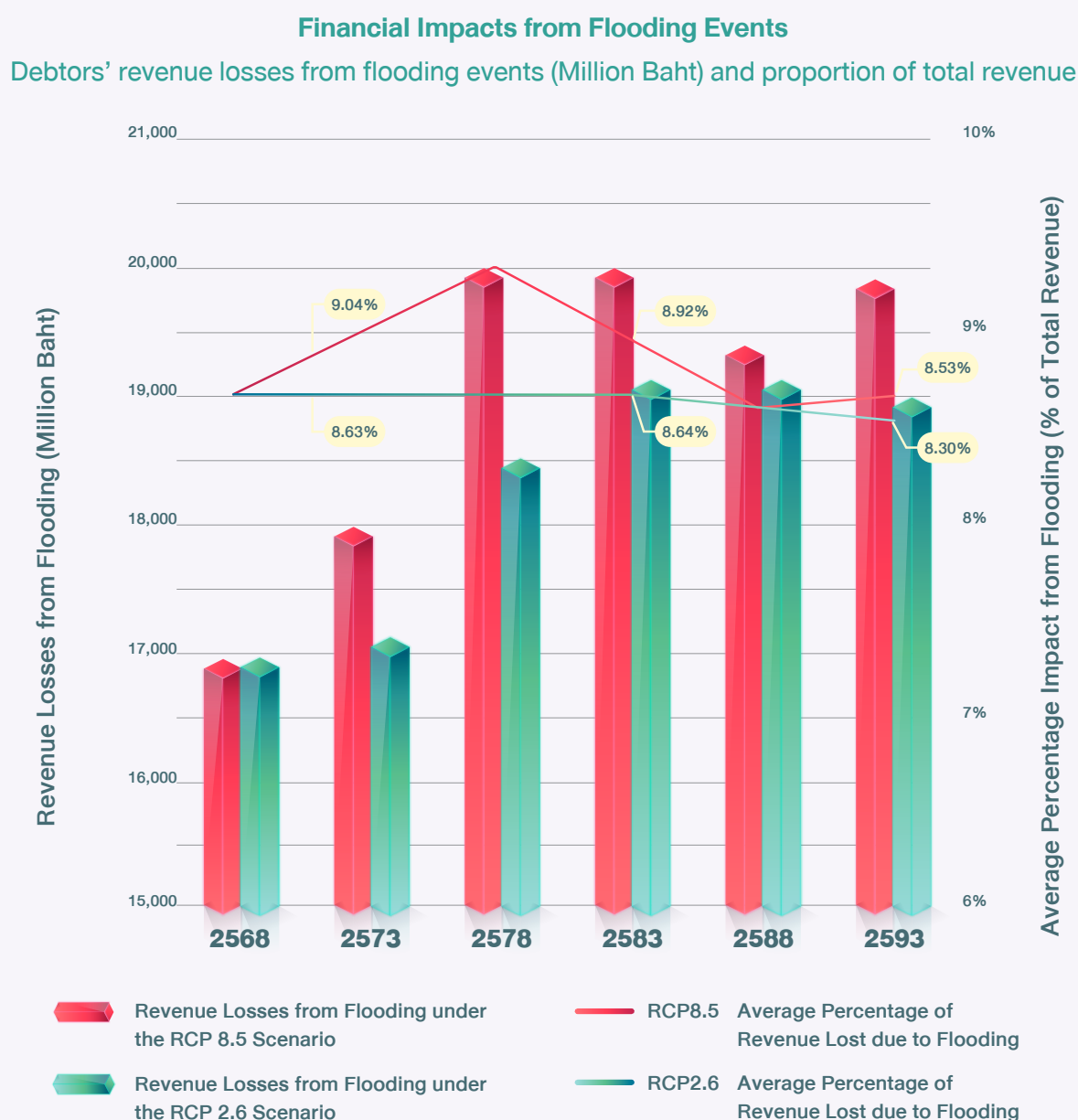
- **RCP 2.6:** a scenario in which global warming is controlled at approximately 1.6°C
- **RCP 8.5:** a scenario leading to severe global warming of up to 4°C by 2643

3.1.2 Results of the Physical Risk Analysis

Based on the financial impact assessment under the scenarios, the power plant projects financed by the Bank are expected to incur total revenue losses of approximately **8%–10%** due to flooding events over the period **2030–2050**. These impacts reflect long-term physical risks arising from climate change.

When comparing the financial impacts under each scenario, as illustrated in [Figure 6](#), it is found that the **RCP 2.6** scenario, which limits global warming to approximately 1.6°C, results in slightly lower revenue losses from flooding compared with the **RCP 8.5** scenario, which is projected to lead to severe global warming of up to 4.3°C by 2100. The differences in outcomes highlight the relationship between climate change severity and the financial risk faced by Bank-supported projects.

Figure 6: Financial Impacts of Flooding Events on Debtors

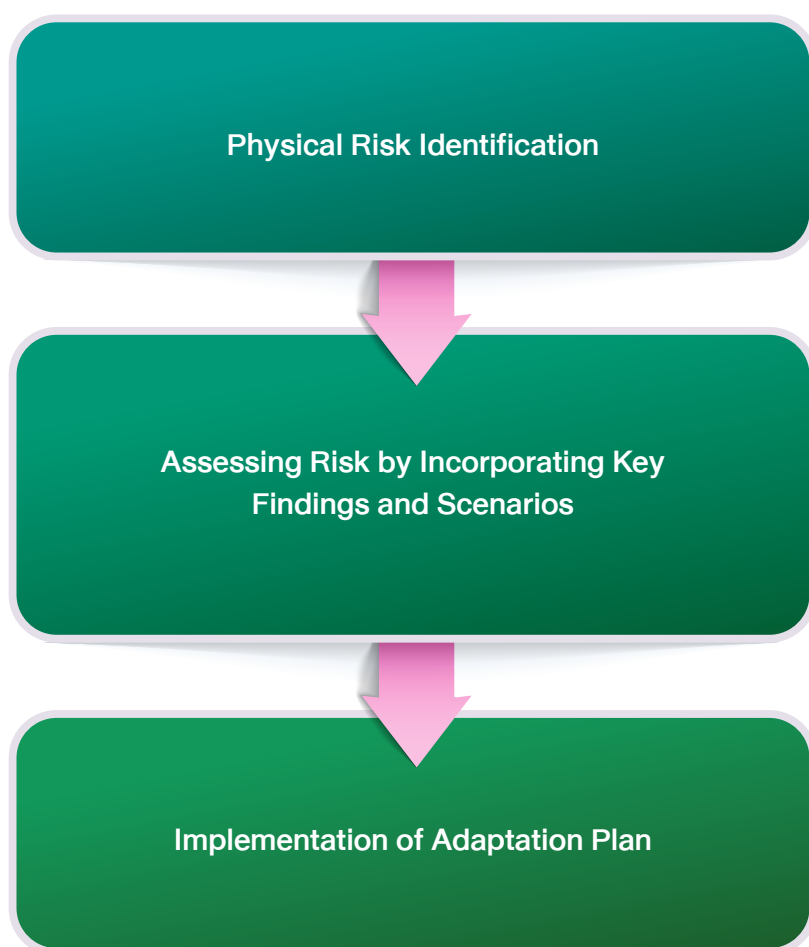


3.1.3 Management and Mitigation Approaches

The Bank recognizes that climate change may affect its business operations. Scientific evidence indicates that as global average temperatures rise, extreme weather events become more severe and more frequent, particularly flooding, which can disrupt business continuity and financial performance. Climate-related impacts may also cause damage to critical infrastructure, such as data centers and branches located in geographically high-risk areas.

When examined in greater depth at the portfolio level, although the preliminary assessment indicates that physical risks from climate change are not expected to be severe, the Bank considers that such risks need to be continuously assessed and monitored. The Bank is developing practical and actionable measures by integrating physical risk indicators derived from studies and scenario models into the credit approval process. Given that physical risks vary by location, the Bank emphasizes comprehensive, location-specific assessments, with particular emphasis on using provincial-level data and models to evaluate potential physical risks before extending new credit.

Figure 7: Process for Identifying, Assessing, and Managing Physical Climate Change Risks



3.2 Transition Risks

Environmental measures such as carbon taxes, Emissions Trading Systems (ETS), or cap-and-trade schemes are receiving increasing attention. A carbon tax imposes a levy on activities that generate greenhouse gas emissions to internalize environmental costs, while an ETS is a mechanism that sets an overall emissions cap and allows organizations to trade carbon emission allowances among themselves. Both measures are intended to incentivize businesses to reduce carbon emissions. These mechanisms may have both direct and indirect impacts on the Bank. For example, the Bank may need to adjust its loan portfolio structure by reducing support for high-carbon-emitting businesses and increasing lending to businesses with more sustainable operating practices.

3.2.1 Scope of Analysis

This scenario analysis covers power plants in which the Bank has exposure through lending activities (with outstanding balances as of the end of 2022). The power plants are categorized into three types:



Coal-fired power plants



Natural gas-fired power plants



Biomass power plants

The analysis focuses on transition risks arising from changes in environmental policies and regulatory measures, particularly carbon pricing policies, which may affect operating costs and debtors' debt-servicing capacity. The impact assessment considers two main factors:



Carbon Tax

the imposition of taxes on greenhouse gas emissions, which increases electricity generation costs, especially for coal-fired and natural gas-fired power plants



Emissions Trading System (ETS), or cap-and-trade

a mechanism that sets a cap on greenhouse gas emissions and allows emission allowances to be traded among organizations, which may affect power plants' production planning and cost structure

The assessment is conducted across three time horizons: (1) short term: 2030, (2) medium term: 2040, and (3) long term: 2050, using two climate change scenarios:

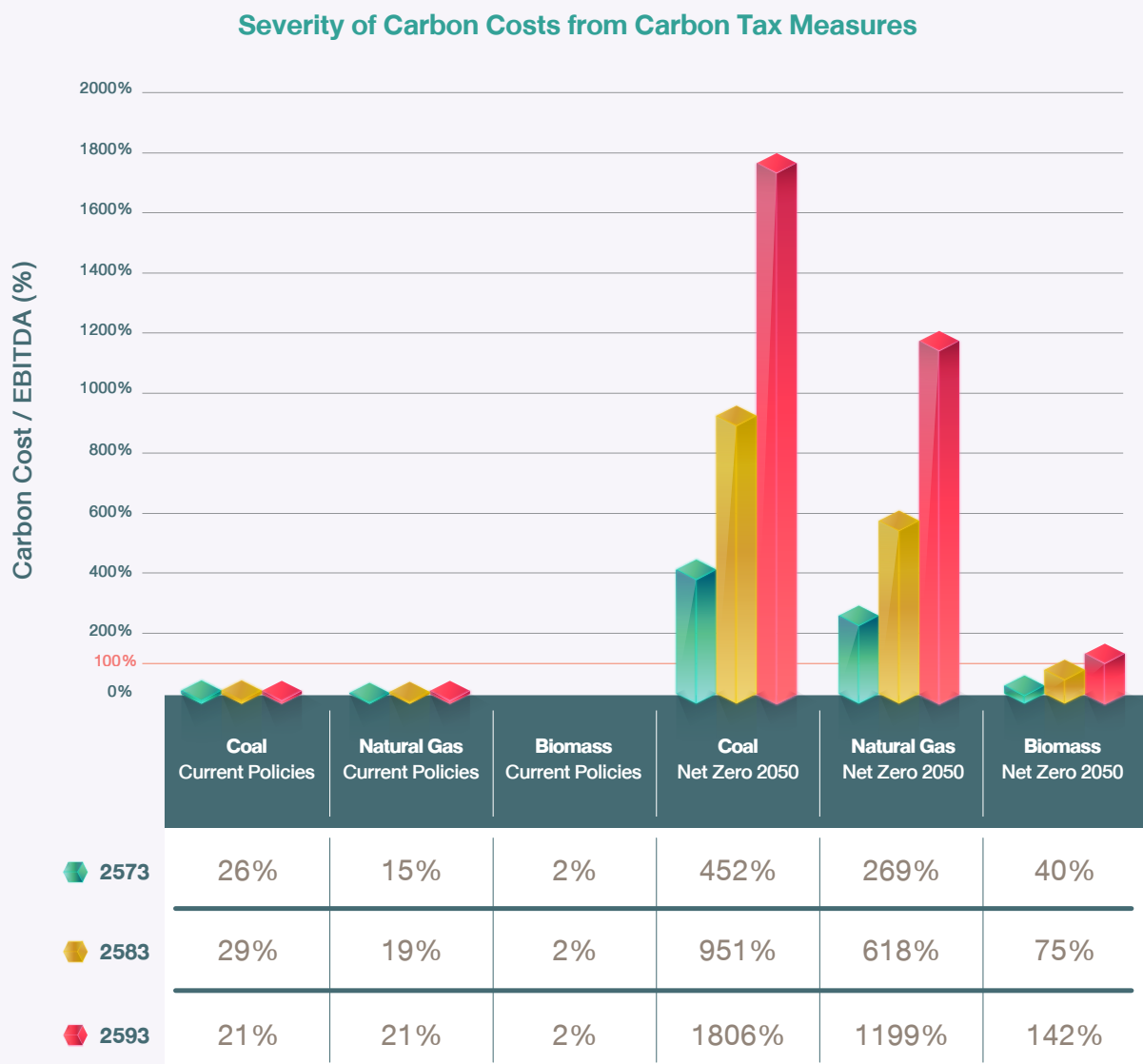
■ **Net Zero 2050 – Limit Global Warming to 1.5°C:** the implementation of stringent policies to continuously control greenhouse gas emissions, with the goal of achieving net zero emissions globally by 2050 and limiting the increase in global temperatures to no more than 1.5°C above pre-industrial levels.

■ **Current Policies – No change in related policies:** A scenario characterized by delayed policy action, resulting in higher transition costs in the medium and long term.

3.2.2 Results of the Transition Risk Analysis

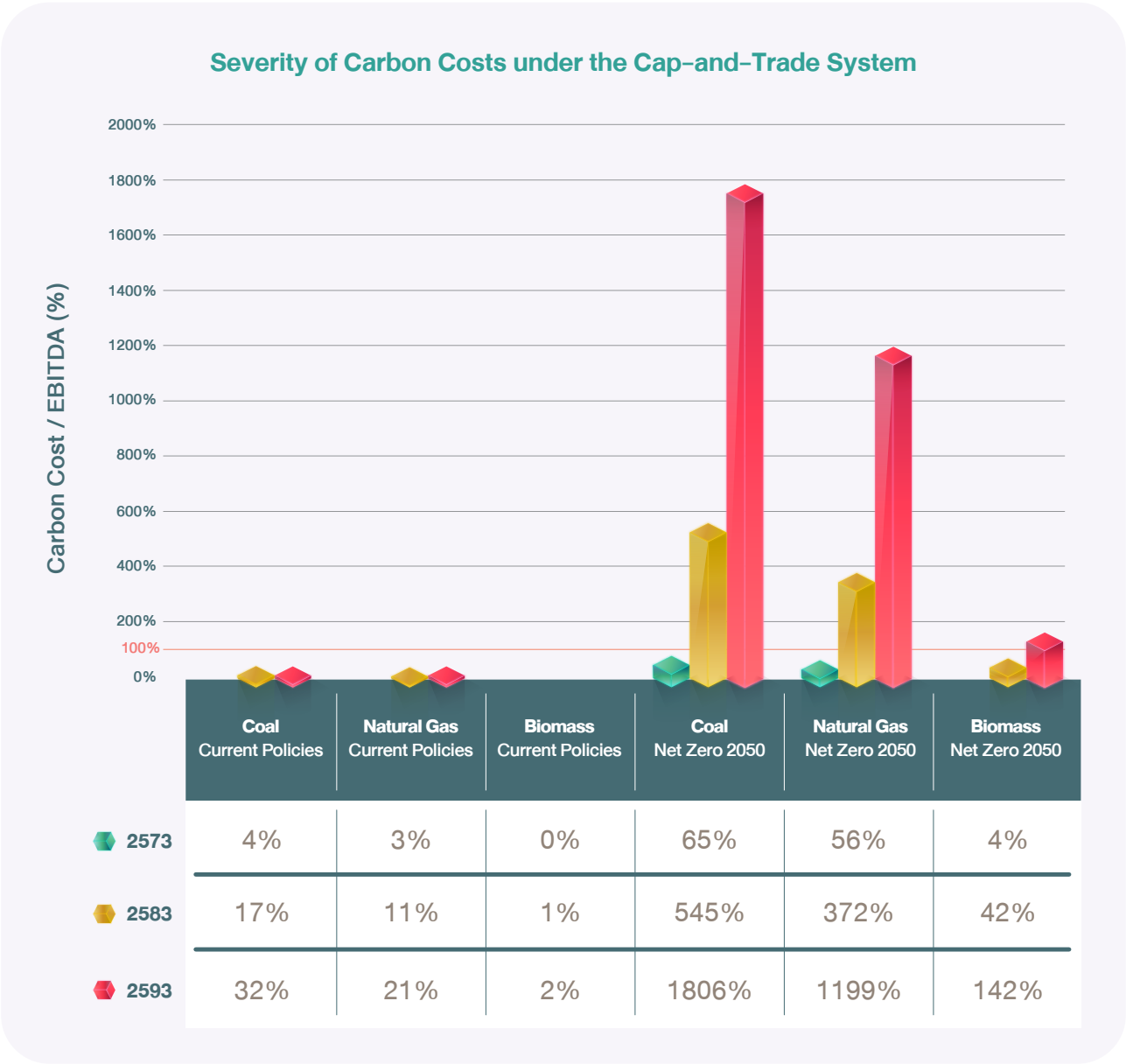
The portfolio of power plant projects financed by the Bank is expected to experience varying impacts from carbon policies. Under the Current Policies scenario, which reflects relatively less stringent policies, carbon costs increase only slightly, resulting in limited impacts on power producers' profitability. For example, carbon costs for coal-fired power plants account for approximately 26% of EBITDA in 2030, 29% in 2040, and decline to 21% in 2050, remaining at a level that still allows for profitability. However, under the Net Zero 2050 scenario, which involves stringent policies to achieve net zero emissions, carbon costs rise significantly and adversely affect profitability from 2030 onward, as illustrated in Figure 8.

Figure 8: Severity of Carbon Costs from Carbon Tax Measures



Under the cap-and-trade measure in the Current Policies scenario, which reflects relatively less stringent policies, emission allowance prices remain low, resulting in limited impacts on power producers' profitability. For example, carbon costs for coal-fired power plants account for only 4% of EBITDA in 2030, 17% in 2040, and 32% in 2050. However, if the world follows the Net Zero 2050 pathway, which entails more stringent policies, the impacts are expected to be significantly more severe from 2030 onward, as emission allowance prices increase substantially, as illustrated in [Figure 9](#).

Figure 9: Severity of Carbon Costs under the Cap-and-Trade System



3.3 Management and Mitigation Approaches

Since 2023, the Bank has integrated the transition to a low-carbon economy into its core strategy to mitigate risks arising from carbon pricing. This initiative began with active engagement with customers and investee companies, aimed at communicating the urgency of climate change and the critical role of large organizations in driving a sustainable future. The Bank also sets ambitious targets to achieve net-zero emissions by 2050, building a future in which organizational success is intrinsically linked to sustainability. The Bank continuously monitors progress toward targets and regularly reports on outcomes each year to demonstrate transparency and commitment to driving meaningful change. At the same time, the Bank continues to develop strategies and supportive measures to enable debtors and investee companies to achieve tangible reductions in greenhouse gas emissions, while mitigating risks from emerging policies, such as carbon taxes, that may be introduced in Thailand and the Lao PDR.

Figure 10: Engagement and Transparency Process for Carbon Emissions Reduction



3.4 Transition Opportunities

Thailand is advancing its Power Development Plan (PDP) and net-zero greenhouse gas emissions targets to reduce greenhouse gas emissions and increase the share of clean energy in Thailand's power system. It is also a significant opportunity for the Bank to support investment in renewable energy projects, such as solar, hydropower, and biomass. Such investments not only help drive the green economy but also create new business opportunities aligned with government policies and evolving market demand. By preparing appropriate financial products and support mechanisms, the Bank can play a key role in facilitating the country's transition toward clean energy.

3.4.1 Scope of Analysis

The analysis of transition opportunities covers three types of power plants:



Solar power plants



Hydropower plants



Biomass power plants

The analysis focuses on transition opportunities arising from the restructuring of the energy sector and the country's progress toward net-zero greenhouse gas emissions. These developments are driving increased investment demand for renewable energy projects, such as solar, hydropower, and biomass, in which the Bank can play a key role by providing financial support to facilitate the transition. The opportunity assessment is based on two main factors:



Market Assessment

analysis of trends and potential in the renewable energy market, drawing on information from the Power Development Plan (PDP), generation capacity readiness, and electricity generation costs, to identify the types of renewable power plants with the highest potential in each time horizon.



Bank Capability

Assessment of the Bank's internal readiness to support renewable energy projects, considering alignment with its risk management framework and the availability of tools and processes for lending and financial support.

The assessment is conducted across three time horizons: (1) short term: 2030, (2) medium term: 2040, and (3) long term: 2050, using two climate change scenarios:

■ **Net Zero 2050 – Limit Global Warming to 1.5°C:** the implementation of stringent policies to continuously control greenhouse gas emissions, with the objective of achieving net zero greenhouse gas emissions globally by 2050 and limiting the increase in global temperature to no more than 1.5°C above pre-industrial levels.

■ **Current Policies – No change in related policies:** A scenario characterized by delayed policy action, resulting in higher transition costs in the medium and long term.

3.4.2 Results of the Opportunity Analysis

The analysis of renewable energy options in Thailand indicates that solar energy has the highest potential across all time horizons. In 2030, solar achieves a combined score of 74%, and it continues to lead in 2040 and 2050 with scores of 71% and 70%, respectively. Meanwhile, hydropower shows a growing trend, increasing from 12% in 2030 to 25% in 2050, reflecting its expanding potential in the future. Biomass, however, has a relatively small share and continues to decline, falling from 14% to 5% in 2050, indicating that its importance is likely to diminish over the long term. These results are illustrated in Figure 11. Concerning Bank capability, the score remains constant at 33% across all energy options and all years. This is primarily driven by risk management practices and the availability of operational tools that do not differentiate among energy options; instead, they represent baseline conditions that must be consistently maintained. Overall, these findings suggest that the Bank's investment strategy should prioritize solar energy, while considering hydropower as a longer-term opportunity, whereas biomass may not represent a key option for future investment, as shown in Figure 11.

Figure 11: Results of the Transition Opportunity Analysis

Category	Drivers	Assessment Criteria	Indicators	2573				2583				2593		
				Weight				Weight				Weight		
Market Assessment	Scenario Assessment	Electricity Supply by Scenario in Thailand (NGFS)	Current Policies Scenario	20%	4.44	1.19	0.36	20%	4.56	1.17	0.27	45%	4.56	1.34
			Net Zero 2050 Scenario	20%	4.10	1.35	0.56	20%	3.76	1.39	0.84	45%	3.76	1.56
	Market readiness, policy impact costs, and competitiveness	National Power Development Plan; market readiness (MW)	New electricity generation	50%	4.92	0.02	1.06	50%	4.63	0.03	1.35	No data available		
		Levelized Cost of Electricity (LCOE) based on the IEA model (USD/MWh)	Levelized Cost of Electricity (LCOE), ranked from lowest to highest	10%	3.00	2.00	1.00	10%	3.00	2.00	1.00			
	Market Assessment				74%	12%	14%		71%	14%	15%		70%	25%
Bank Capability	Risk Appetite	Alignment of the Bank's risk appetite with the risk profile of each segment	Risk Acceptance	50%	3.00	3.00	3.00	50%	3.00	3.00	3.00	50%	3.00	3.00
	Operational Capability	Availability of tools and expertise to pursue opportunities in each segment	Bank's plans	50%	1.80	1.80	1.80	50%	3.00	3.00	3.00	50%	3.00	3.00
	Bank Capability				33%	33%	33%		33%	33%	33%		33%	33%

 Solar  Hydro  Biomass

4. Climate Change Strategy Implementation Projects



Long - Term Targets and the Net-Zero Roadmap

The Bank has set a strategic target to achieve net-zero greenhouse gas emissions by 2050, in alignment with the Science Based Targets initiative (SBTi). To support this commitment, the Bank has developed a comprehensive roadmap covering the period 2021–2050, which includes short-term targets such as reducing greenhouse gas emissions by more than 50% by 2030. These targets have been integrated into the Bank’s corporate strategy through actions encompassing both internal operations and external engagement.



Actions to Reduce Greenhouse Gas Emissions

The Bank has implemented initiatives focused on energy efficiency, such as installing solar panels on office buildings, upgrading facilities to improve energy performance, and adopting electric vehicles (EVs) for internal operations. In addition, the Bank undertakes reforestation and green area restoration to enhance carbon sequestration, and promotes the 3R principles (Reduce–Reuse–Recycle) across its operations to ensure efficient resource use and waste reduction.

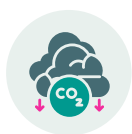
The Bank has also developed sustainability-oriented lending products, including GSB Green Biz, GSB Green Home Loan, GSB Go Green, and financing under the BCG Economy framework. Furthermore, ESG Scores are incorporated into credit assessments for large corporate clients to support the business sector’s transition toward more sustainable practices.

GSB
Green Biz

GSB
Green Home Loan

GSB
GO Green





Transition to a Low – Carbon Economy

To support the transition to a low-carbon economy, the Bank has announced Exclusion /Negative / Positive List policies, under which it will cease providing additional support to coal-related businesses. The Bank also monitors and invests in low-carbon technologies and engages in research and development (R&D) collaborations to support emerging technologies that reduce greenhouse gas emissions. In addition, the Bank has set clear lending targets, including increasing the share of loans for clean power generation projects to 35% by 2030, and ensuring that, by 2030, 40% of lending to listed companies supports businesses committed to achieving net-zero greenhouse gas emissions by 2050. The Bank also plans to discontinue lending to projects that do not obtain green building certification from 2040 onward. Furthermore, the Bank invests in green and sustainability-linked assets and undertakes capital mobilization initiatives to support the business sector's transition.



Adaptation to Climate Change – Related Risks

The Bank has integrated the results of its physical climate risk assessments into the credit origination process, particularly for large corporate debtors with high greenhouse gas emissions. This is implemented through the Positive Engagement program, under which the Bank collaborates with advisors to engage directly with clients by providing technical information, analyzing greenhouse gas inventories, and proposing practical approaches or technologies that can be applied within business operations. The objective of this program is to enhance clients' understanding of environmental issues and support their capacity to adapt to climate-related risks. In addition, the Bank provides both financial and non-financial support to enable effective long-term implementation and to help clients prepare for future access to sustainability-focused sources of finance.



Monitoring and Reporting of Performance

The Bank has established a comprehensive system for ongoing monitoring and reporting of climate-related performance, covering the measurement of greenhouse gas emissions across Scopes 1–3 and the tracking of progress against the defined roadmap, such as the number of offices and branches equipped with solar panels, as well as the annual electricity generation from these systems. In addition, the Bank monitors reforestation and green area restoration activities and systematically reports the proportion of lending aligned with net-zero greenhouse gas emission targets. The Bank has also defined investment and divestment policies and engages in continuous dialogue with investee companies and debtors to support a sustainable transition toward a low-carbon society.



Risk Management

The Bank places great importance on comprehensive and effective management of risks related to climate change in order to promote stability and protect the interests of the Bank and its stakeholders. At the same time, the Bank is committed to contributing to a sustainable future and reducing greenhouse gas emissions. As a financial institution, the Bank plays a critical role in providing financial support to various business sectors, guided by its core mission to reduce inequality and promote social equity as a Social Bank.

However, without proper risk management and mitigation measures, climate-related risks may affect stakeholders across multiple dimensions. Therefore, the Bank places strong emphasis on establishing a robust and prudent climate risk management system to enhance long-term business resilience and continuity. The Bank has integrated climate change considerations into its overall organizational risk management framework (Risk Universe), ensuring that climate risks are assessed alongside strategic, operational, and financial risks. This approach helps ensure that all risks are appropriately prioritized and effectively managed.

The Bank analyzes and develops its risk management processes, requiring climate-related risks to be assessed and reviewed annually. These challenges are incorporated into the Bank's risk identification and assessment procedures. In addition, the Bank collaborates with stakeholders to promote the exchange of best practices and to support comprehensive actions that effectively address potential climate risks.

1. Climate Change Risk Management Process

The Bank places great importance on managing climate change risks by adopting a comprehensive risk management framework that covers risk identification, assessment, monitoring, control, and reporting. This framework is applied continuously, as illustrated in [Figure 12](#). This framework ensures that climate-related issues, such as future regulations, emerging risks, and the evolving business landscape, are managed effectively and systematically.

Figure 12: Climate Change Risk Management Framework



The Bank recognizes that climate change poses challenges to business sustainability and financial stability. Therefore, it emphasizes prioritizing climate-related risks by integrating them into credit and market risk management. This approach enables the Bank to thoroughly and comprehensively analyze potential impacts on its loan portfolio.

In addition, the Bank proactively monitors climate-related risks and continuously assesses their severity, with particular emphasis on early warning capabilities that enable timely response measures. The Bank also reviews the effectiveness of its risk management system and reports quarterly to the responsible committees. This ensures that the Bank's risk management remains aligned with changing internal and external conditions.

1.1 Risk Identification

Responsible Unit: Sustainability Development Committee

The risk identification process is conducted annually by the Management Committee and the Sustainability Development Committee to identify key factors and vulnerable sectors. Reliable factors – such as levels of risk exposure and greenhouse gas emissions – are taken into consideration. This process encompasses analysis of climate change data, historical information, expert opinions, scenario – based projections, location-specific insights, and findings from leading institutions such as the World Bank and the IEA. This comprehensive approach enables internal stakeholders to generate effective outcomes and meaningful insights that support impact assessment in the subsequent stages.

1.2 Risk Assessment

Responsible Units: Sustainability Development Department, Risk Management Function, and Corporate Business and Public Sector Customers Function

The responsible units conduct a comprehensive risk assessment by integrating scenario models from institutions such as the NGFS and the IPCC to present a range of potential outcomes for the short term (2030), medium term (2040), and long term (2050). This process aligns with the Task Force on Climate-related Financial Disclosures (TCFD) guidelines. This assessment covers both the likelihood and severity of each risk scenario, enabling the identification of vulnerabilities and the financial impact on assets, infrastructure, supply chains, and operations.

1.3 Risk Adaptation and Mitigation

1.3.1 Adaptation Measures to Reduce Physical Climate Risks

Responsible Units: Sustainability Development Department, Risk Management Function, and Corporate Business and Public Sector Customers Function

Physical climate risks may significantly impact the Bank's operations, as well as investors and debtors. Accordingly, the responsible units have developed a comprehensive adaptation process within the Bank's operations. At the portfolio level, the Bank assesses location-specific physical risks across different time horizons and engages with investors and debtors to encourage and raise awareness of developing appropriate adaptation action plans, with the aim of preventing severe impacts from physical risks.

1.3.2 Adaptation to Mitigate Transition Risks

Responsible Units: Sustainability Development Department, Risk Management Function, and Corporate Business and Public Sector Customers Function

The Bank fosters collaboration with stakeholders to promote joint efforts and develop tangible mitigation measures. In doing so, the Bank has carefully considered setting targets for net-zero greenhouse gas emissions, implementing related initiatives, and formulating investment and divestment policies to mitigate risks arising from Thailand's emerging carbon tax. In addition, the Bank anticipates significant impacts of the carbon tax on debtors; therefore, it has established divestment policies (such as phasing out investments in coal) to prevent the risk of loan defaults during the transition to a low-carbon economy.

2. Sources of Data for Climate Change Risk Assessment and Risk Management

The Bank uses data and models from credible, internationally recognized sources to support the assessment and management of both physical and transition risks arising from climate change. These data sources enable the Bank to analyze impacts, establish mitigation measures, and monitor the severity of natural events that may affect assets and power plant operations within its loan portfolio. The Bank also employs scenario analysis aligned with TCFD guidelines as a primary tool for assessing these risks, selecting models from the NGFS and the IPCC to evaluate policy-related and natural hazard risks. The results of this analysis are used to quantify financial impacts and prioritize risks, ensuring effective management across the short, medium, and long term. Key data sources include:

Table 10: Data Sources for Climate Change Risk Assessment and Risk Management

Data Providers	Indicators / Data Used for Assessment
Intergovernmental Panel on Climate Change (IPCC)	IPCC models used to assess the impacts of global temperature increases above 4° C and scenarios in which the temperature rise is limited to 1.5° C by 2100.
Historical Data Research of Thailand	Provincial rainfall – increase projections for Thailand and the average number of days affected by flooding events.
Network for Greening the Financial System (NGFS)	Transition – risk scenario models for analyzing risks associated with the shift to a low – carbon economy, including the impacts of Carbon Tax and Cap-and-Trade schemes.
Thailand Power Development Plan (PDP)	Renewable energy generation data from the Power Development Plan (PDP) to assess opportunities and shifts in the energy market.
Thailand Taxonomy	Thailand’s Sustainable Economic Classification Framework for categorizing activities related to environmental risks and opportunities
International Energy Agency (IEA)	Using electricity generation cost data from the International Energy Agency (IEA) to analyze the impact of electricity costs on businesses in the energy sector

The Bank uses these data sources to support analyses and assessments that monitor the severity and frequency of natural hazards that may affect power plants. This enables the Bank to develop appropriate risk management measures and effectively strengthen its operational resilience.

3. Integration of Scenario Modelling into Climate Change Risk Management

The Bank uses the results of climate scenario analyses from IPCC and NGFS models as a key tool for managing climate – related risks in its power – plant portfolio. These risks include flooding events, carbon taxes, and emissions trading schemes. The Bank establishes appropriate indicators and risk assessment criteria that are aligned with the specific context of this asset class within its risk management process. This process includes assessing the likelihood and severity of each risk scenario, supporting the identification of vulnerabilities and the financial impact on assets, infrastructure, supply chains, and operations. The Bank integrates scenario-based information into a systematic framework for identifying, assessing, monitoring, and controlling risks, allowing for accurate and effective risk prioritization. This approach also enables the Bank to enhance its risk mitigation measures appropriately and in line with evolving conditions.





Indicators and Targets

The Bank is committed to reducing the climate impacts associated with its business operations and has announced a Net - Zero greenhouse gas emissions target across its entire value chain by 2050, aligned with the Science Based Targets Initiative (SBTi). This target covers direct emissions (Scope 1), indirect emissions from electricity consumption (Scope 2), and indirect emissions from the Bank's value chain (Scope 3).

To achieve this goal, the Bank has established a set of indicators and targets to monitor performance, along with procedures for verifying and reporting greenhouse gas emissions in accordance with the Greenhouse Gas Protocol. For investments and lending portfolios, the Bank applies the Partnership for Carbon Accounting Financials (PCAF) methodology to calculate financed emissions. These datasets enable the Bank to analyze its overall emissions profile and effectively prioritize reduction and removal strategies.

In addition, the Bank has set an Interim Target for 2030 to ensure that progress remains measurable, transparent, and aligned with international standards. This target is reviewed and updated regularly to support the Bank's long - term Net - Zero pathway.

1. Greenhouse Gas Emissions Inventory

To ensure transparency and standardization in reporting, the Bank has established its greenhouse gas emissions inventory in accordance with ISO 14064 – 1:2018 and the organizational carbon footprint calculation and reporting requirements issued by the Thailand Greenhouse Gas Management Organization (Public Organization) (8th Edition, 6th Revision, July 2022). In addition, the Bank applies the Partnership for Carbon Accounting Financials (PCAF) Standard – Part A for calculating greenhouse gas emissions associated with lending and investment activities.

1.1 Reporting Scope

The Bank's greenhouse gas inventory covers all emission scopes in accordance with international standards and is reported using the Bank's target-setting boundaries. This includes direct greenhouse gas emissions (Scope 1) from activities such as fossil fuel combustion and greenhouse gas leakage as defined by the IPCC; indirect emissions from purchased electricity (Scope 2) supplied by the Metropolitan Electricity Authority and the Provincial Electricity Authority; and other indirect emissions (Scope 3) arising from lending and investment activities. All disclosures in this report align with the GRI Standards 2021 and are linked to the SDGs and UNEP FI principles, ensuring transparency and accountability in the Bank's environmental responsibility.

1.2 Calculation of the Bank's Greenhouse Gas Emissions

Greenhouse gas emissions are a critical issue that reflects the environmental impact of economic activities, particularly in the financial sector, which contributes to emissions both directly and indirectly. Therefore, calculating greenhouse gas emissions is an essential step in managing and reducing the environmental impacts associated with the Bank's operations.

1.2.1 General Approach to Greenhouse Gas Emissions Calculation

Greenhouse gas emissions from general operations (General Emissions) cover Scope 1, Scope 2, and Scope 3 emissions. The calculation methodology is illustrated in [Figure 12](#). The Bank uses emission factors provided by the Thailand Greenhouse Gas Management Organization (TGO), based on IPCC guidelines, the Carbon Footprint for Organization (CFO) standard, and the UK Defra database. These internationally and nationally recognized sources ensure accuracy and alignment with global best practices in the Bank's emissions calculations.

1.2.1.1 The Bank's Greenhouse Gas Emissions

The Bank has designated 2021 as the base year for tracking and comparing its greenhouse gas emissions reduction performance, as it was the first year in which the Bank developed its greenhouse gas inventory under Phase 1 of GSB Eco-Efficiency Assessment Framework. This framework was implemented in accordance with the Memorandum of Understanding between the State Enterprise Policy Office (SEPO) and Government Savings Bank (GSB). In 2024, the Bank's total greenhouse gas emissions amounted to 2,643,219.47 tonnes of carbon dioxide equivalent (tCO₂e). These emissions can be categorized by scope as shown in [Table 11](#).

Table 11: Greenhouse Gas Emissions

Indicators (tonnes of CO ₂ equivalent)	2022	2023	2024
Direct greenhouse gas emissions (Scope 1)	15,805.60	16,049.56	16,257.66
Indirect greenhouse gas emissions (Scope 2)	32,201.40	34,657.97	34,612.26
Other indirect greenhouse gas emissions (Scope 3, Category 15)	2,073,277.26	2,112,185.43	2,592,349.55
Total	2,121,284.26	2,162,892.96	2,643,219.47

* Notes:

* The reporting of greenhouse gas emissions covers carbon dioxide, methane, and nitrous oxide, which are calculated and presented in the form of carbon dioxide equivalent (CO_{2e}) using Global Warming Potential (GWP) values. Greenhouse gas emissions within the scope of the Net Zero Roadmap target are derived from the Bank's lending and long-term investment activities across various sectors, including listed equities, listed corporate bonds, corporate loans to listed companies, loans to power generation projects, and commercial real estate loans.

** The Bank established its Net Zero Roadmap in August 2023 and began implementing greenhouse gas emission reduction measures in accordance with the roadmap from August 2023 onward. Prior to the implementation of the roadmap, the Bank had extended loans to industrial sectors to support business expansion, and certain corporate debtors increased their greenhouse gas emissions compared with 2023, resulting in higher indirect greenhouse gas emissions.

The increase in Scope 3 Category 15 greenhouse gas emissions was primarily attributable to corporate debtors in the power generation sector. Compared with the base year, certain power generation debtors increased their loan drawdowns, while others expanded their power generation capacity, resulting in higher greenhouse gas emissions associated with their operations. Consequently, this led to an increase in the Bank's Scope 3 Category 15 greenhouse gas emissions.

1.2.2 Calculation of Greenhouse Gas Emissions from Lending and Investment (Financed Emissions Approach)

Greenhouse gas emissions from investments (Financed Emissions), which fall under Scope 3, Category 15: Investments, are calculated by the Bank in accordance with PCAF Standard, Part A. The calculation approach is illustrated in Figure 13.

Figure 13: Calculation of Greenhouse Gas Emissions from Lending and Investment

$$\text{Greenhouse Gas Emissions from Lending and Investment} = \sum \text{Attribution Factor}^* \times \text{Asset - Level Greenhouse Gas Emissions}$$

*Proportion of Ownership in the Asset (Equity and Debt Ownership %)

1.2.1.2 Greenhouse Gas Emissions from Lending and Investment

Table 12: Greenhouse Gas Emissions from Investments and Lending

Asset Type	Total Outstanding Balance (Million Baht)	Emissions Volume Scope 1 + 2 (tCO ₂ e)	Emission Intensity per Economic Value (tCO ₂ e per Million Baht)
Listed Equity	18,879.75	59,093.35	3.13
Listed Corporate Bonds	15,399.66	78,529.27	5.10
Corporate Loans (Listed Companies)	73,888.78	1,006,878.43	13.63
Commercial Real Estate Loans	12,131.69	85,118.35	7.02
Project Finance	24,709.70	1,362,730.15	55.15
Total	145,009.58	2,592,349.55	17.88

2. Commitment to Achieving Net – Zero Greenhouse Gas Emissions

The Bank is committed to advancing greenhouse gas emissions reductions in alignment with the Paris Agreement, to which Thailand is a signatory. The Agreement aims to limit the increase in global temperature to well below 2 °C above pre-industrial levels, with efforts to restrict the rise to no more than 1.5 °C

2.1 Action Plan Toward Net – Zero Emissions

The Bank has set an interim target to reduce its absolute greenhouse gas emissions by 50% by 2030, compared with the base year 2021. This target is set on a gross basis, excluding carbon offsets or removals. The Bank has also committed to achieving Net-Zero greenhouse gas emissions by 2050, with an implementation plan outlined in [Table 13](#)



Net Zero Target and Roadmap

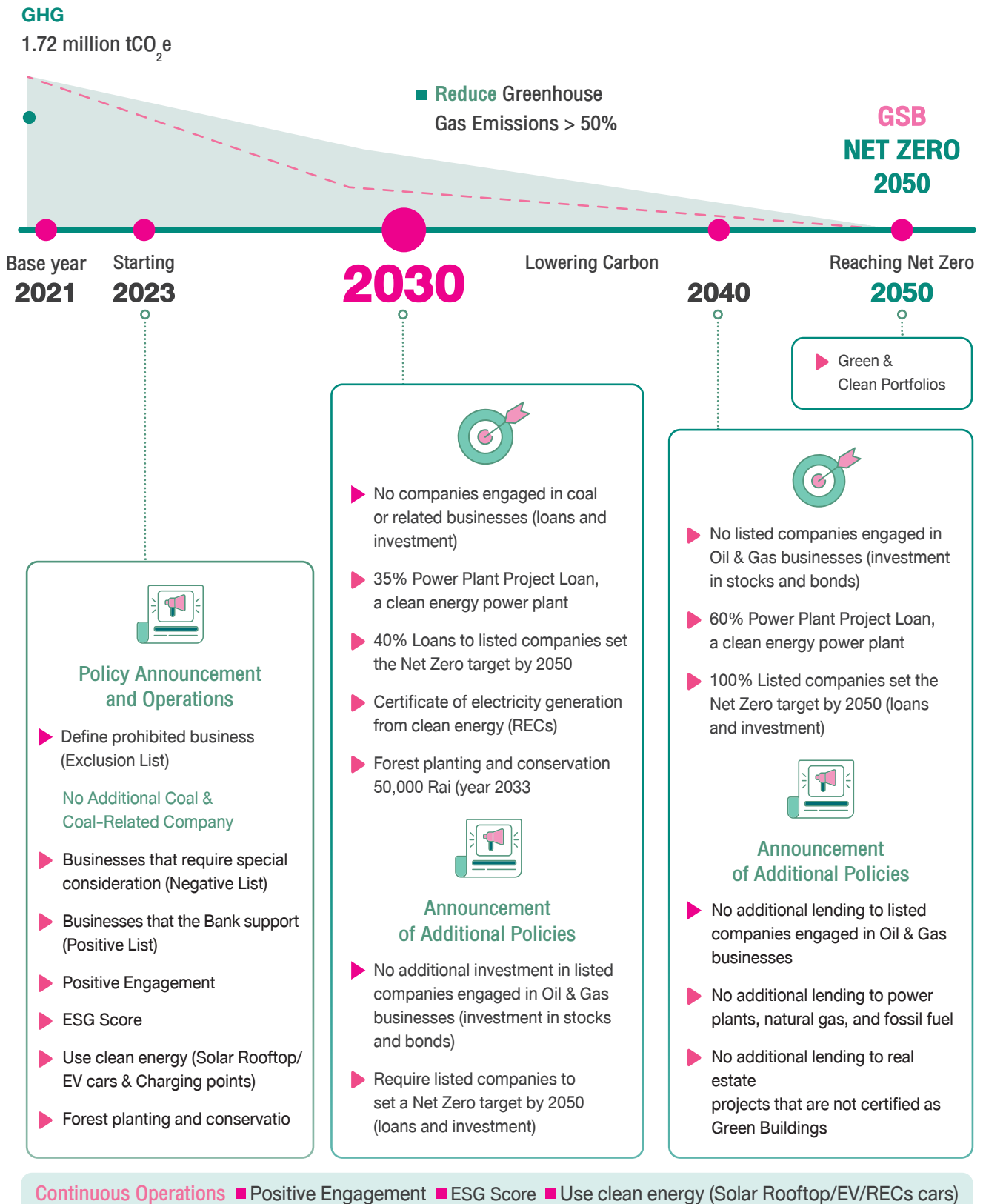


Figure 13: Action Plan for Achieving Net-Zero Greenhouse Gas Emissions

Low-Carbon Operations	Renewable Energy	Net-Zero Greenhouse Gas Emissions Portfolio
• Establish energy-saving measures • Adopt energy-efficient technologies, such as IoT and motion sensors • Design/renovate green buildings for the headquarters and bank-owned branches to enhance energy efficiency (e.g., LEED, USGBC) • Replace internal combustion engine vehicles with electric vehicles (EVs) • Study the use of carbon-free refrigerants • Implement capacity-building initiatives to raise awareness among GSB officers • Conduct reforestation in accordance with the established plan	• Use electricity generated from clean energy sources • Announce a policy on the use of clean electricity • Install solar rooftop systems at the headquarters and branch offices • Purchase Renewable Energy Certificates (RECs)	• Establish investment and lending policies that support the low-carbon operations of GSB • Enhance capacity in low-carbon investment and lending for the relevant departments of GSB • Positively engage with companies in which the Bank invests or to which it provides loans to build understanding and seek cooperation in reducing greenhouse gas emissions • Provide environmentally friendly financing to support customers' transition toward net-zero greenhouse gas emissions • Refrain from any additional investment or lending to fossil fuel businesses or related sectors



2.2 Projects and Practical Implementation Measures

Low-Carbon Operations: Implement energy-saving projects and install energy – efficient technologies; apply green – building principles to bank-owned properties; transition to an electric – vehicle fleet; and undertake forest – planting and conservation efforts to support carbon sequestration.

Renewable Energy: Shift to the use of clean electricity; install solar panels to generate on-site renewable electricity; purchase Renewable Energy Certificates (RECs); and continuously monitor advancements in low-carbon technologies.

Net-Zero Greenhouse Gas Emissions Portfolio: Establish investment and divestment policies; engage in dialogue with investee companies and borrowers; and mobilize financing to support the transition toward a low – carbon society.

Year 2030

No investment in, or lending to, coal businesses or coal – related industries.



Year 2050

No investment in, or lending to, fossil – fuel businesses or fossil – fuel – related industries.





Climate Change Report

GSB Climate Report

Government Savings Bank