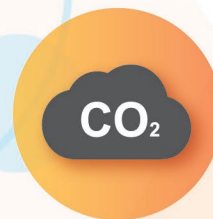
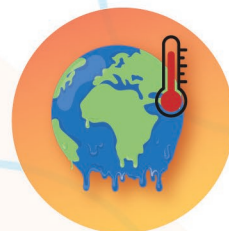




彰化銀行

Climate-Related Financial Disclosures TCFD Report



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Climate-Related Financial Disclosures
TCFD Report (December, 2022)

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Introduction

To limit the global average temperature increase to 1.5°C, the Intergovernmental Panel on Climate Change (IPCC) in its AR6 Synthesis Report has called for more urgent climate actions to reduce global greenhouse gas emissions by half by 2030, and achieving net-zero emissions by 2050. The National Development Council released the "Taiwan's Pathway to Net-Zero Emissions in 2050" in 2022, focusing primarily on driving industry transitions and climate regulations. "Green finance" is also highlighted as a significant measure within this framework.

Chang Hwa Bank(The Bank) officially signed the Science Based Targets initiative (SBTi), recognized as the most credible global organization for emissions reduction targets, in June 2022. As the first government-owned bank in Taiwan to commit to SBTi targets, the Bank has established Category 1 and Category 2 greenhouse gas emissions reduction targets with 2020 as the base year, aiming at a 42% reduction by 2030.

As an institutional investor and funder, the Bank has long engaged itself in addressing climate change issues. In 2022, the Board of Directors approved the inclusion of climate risk as part of overall risk management and established a "Climate Risk Management Policy" to identify, assess, and respond to climate risks and opportunities arising from climate change. We have also formulated environmental policies, overseen their implementation, and regularly tracked and monitored progress to effectively understand the impacts of climate risk. Following a comprehensive assessment of these impacts, we adopted two key climate actions: "mitigation" and "adaptation," aiming to leverage our financial influence to guide companies towards low-carbon transitions.

About the report

Boundary of operations

The boundary of the Report focuses on the operations of the Bank and partial information includes domestic and overseas subsidiaries.

Report scope

The scope of the Report covers the period from January 1, 2022, to December 31, 2022.

Basis for reporting

The Report adopts the core elements of the "Recommendations of the Task Force on Climate-related Financial Disclosures" (the "TCFD recommendations") released by the Financial Stability Board (FSB) as the framework, and the "Guidelines for Domestic Banks' on Climate Risk Financial Disclosure" (referred to as the TCFD Guidelines) established by the Financial Supervisory Commission.



01

Climate Governance

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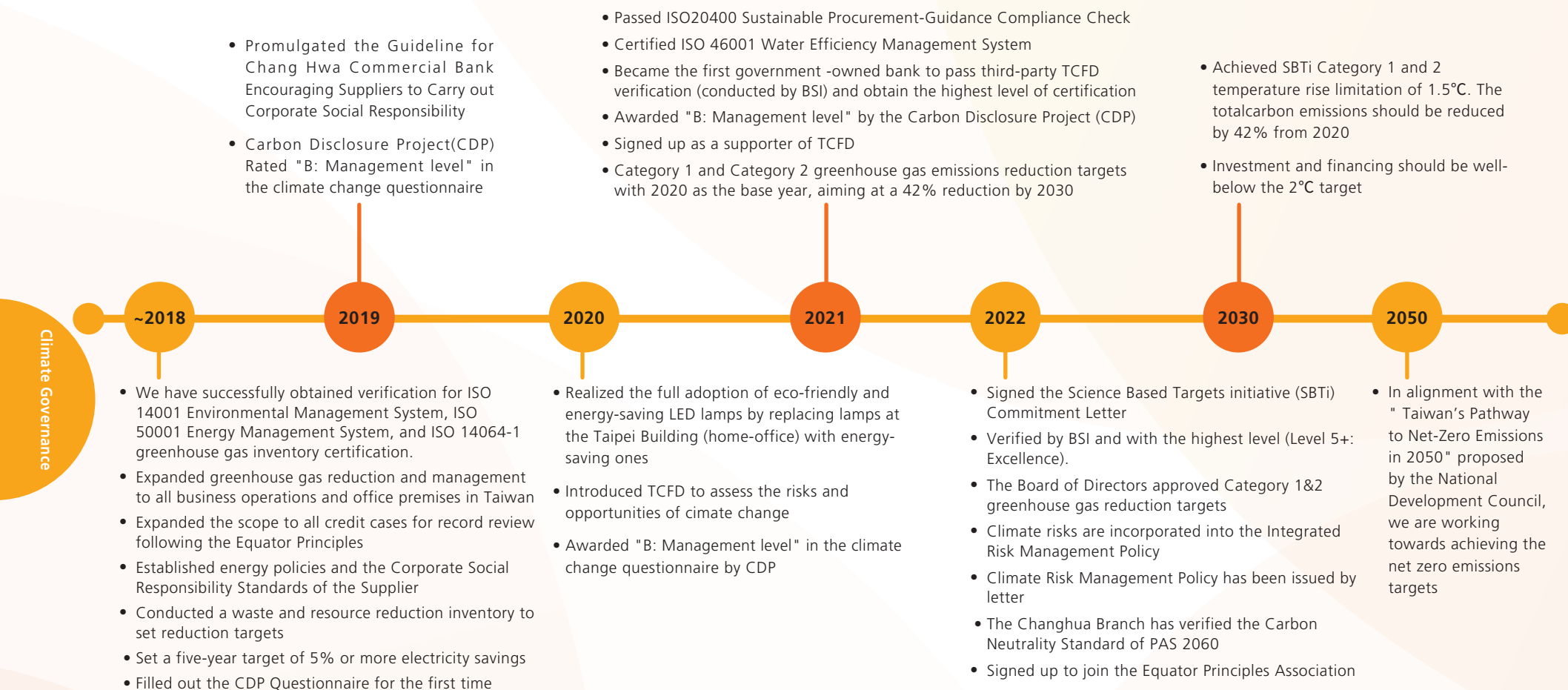


1-1 Climate governance progress

In line with international standards and to strengthen management and response to climate risks, the Bank has submitted for Board approval the inclusion of climate risk as part of the highest compliance guidelines for risk management, so as to complete the scope of risk management. By reviewing carbon reduction strategies within our investment and financing portfolio, we establish review criteria for counterparties' response to climate risks, engage with high carbon-emitting companies that have yet to implement climate risk management, and support their transition to a low-carbon model. The Bank also signed the Science-Based Targets initiative (SBTi) commitment in 2022.

As one of Taiwan's government-owned banks, the Bank aligns with the "Taiwan's Pathway to Net-Zero Emissions in 2050" issued by the National Development Council in 2022, developing response plans and actions to address the short-, medium-, and long-term goals.

Figure1 Climate governance progress and targets



1-2 Climate Governance Framework

The Board of Directors serves as the Bank's highest governance body for climate issues, guiding, supervising, and managing the Bank's exposure to climate risks, ensuring that the qualitative and quantitative measures adopted by the Bank align with its risk appetite. In late 2021, we formed the Task Force on Climate-related Financial Disclosures (TCFD), led by the Risk Management Division, to identify and assess climate risks and opportunities. The Bank developed relevant environmental action plans based on its climate-related policies and oversees their implementation. The Risk Management Division consolidates the progress and reports the monitoring status on a quarterly basis to the Board of Directors, the Sustainable Development Committee, and the Risk Management Committee. Additionally, overseas subsidiaries/branches are gradually establishing climate governance frameworks compliant to local regulatory requirements. They report climate-related opportunities, risks, and relevant management measures back to the headquarters in Taiwan.

Figure2 Climate governance framework (Reporting Process)

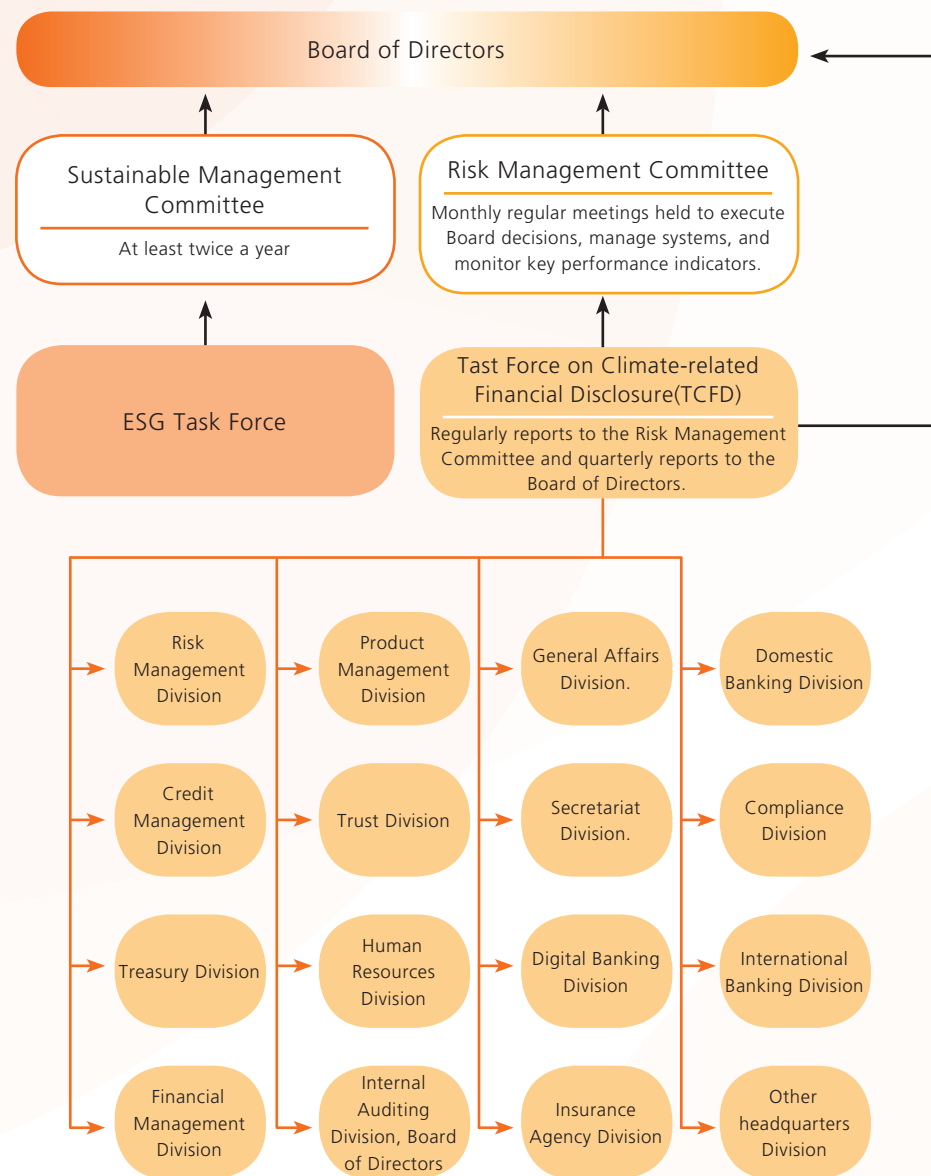


Table 1 Meeting frequencies and roles in climate governance framework of CHB units.

Organizations	Convenor/ Responsible	Frequency of meetings	Role of Climate Issues
Board of Directors	Chairperson	Once per month (at least once per quarter as specified in the Articles of Incorporation)	The highest governing body for climate-related matters that actively monitors climate change issues to assess climate-related risks and opportunities relevant to the Chang Hwa Bank.
Sustainable Development Committee	Chairperson	At least twice per year and as necessary	<p>The contents of climate-related meetings are as follows:</p> <p>Identification and monitoring of climate change risks and development of corresponding mitigation strategies.</p> <p>Regularly reports on the progress of greenhouse gas inventory and verification, as well as the achievements in greenhouse gas reduction initiatives.</p> <p>Key decision items regarding major climate-related issues.</p>
Risk Management Committee	President	Monthly	The Committee is responsible for monitoring the Bank's exposure to climate risks, evaluating the resilience of the Bank's countermeasures in different climate scenarios.
Sustainable Development Task Force	Executive Vice President	Ad hoc meetings	An Executive Vice President is appointed by the Sustainable Development Committee as the general person in charge, and each task force (corporate governance, responsible finance, employee care, social inclusion, and environmental sustainability) implements sustainable development tasks, including climate issues.
TCFD Task Force	Risk Management Division	Ad hoc meetings	Identifying and assessing climate risks and opportunities, formulating environmental policies, and monitoring their implementation.

Board of Directors

The Bank has incorporated climate change issues into its internal risk management framework. The execution status of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and the exposure risks to carbon-intensive industries are reported to the Risk Management Committee on a quarterly and monthly basis. They are also included in the quarterly Risk Management Report for the Board of Directors to review.

We also organize professional training programs on sustainability and climate-related topics for directors to enhance their understanding and keep them updated on climate-related issues.

Sustainable Development Committee

The Sustainable Development Committee serves as the dedicated unit for sustainable development and is responsible for overseeing and reviewing the actions toward achieve sustainability goals. A total of six meetings were held in 2022, and the progress and outcomes of relevant project implementations have been reported.

Risk Management Committee

Implementing the board-approved mechanisms and monitoring metrics for climate risk and significant decision management. Regular monthly reports to the Board on the exposure to high climate-related risks¹ within the approved credit and investment limits.

Task Force of Climate-related Financial Disclosure

The Task Force on Climate-related Financial Disclosures (TCFD) was established at the end of 2021, led by the Risk Management Division. It convenes and coordinates various units within the head office to set targets and regularly monitor and track the proposed amendments to TCFD-related policies, as well as measures to address climate-related opportunities and impacts. Relative implementation plans are developed to ensure targets are met.

Routine TCFD meetings started in July 2022. Two sessions have been held to date.

Sustainable Development Task Force

Responsible for sustainable matters, including climate-related issues, and reporting to the Sustainable Development Committee. A total of 7 meetings were held in 2022, discussing climate-related issues including the progress of greenhouse gas-related projects and reporting matters for review by the Sustainability Committee and the Board of Directors. These matters included achievements in greenhouse gas and environmental metrics, future plans for greenhouse gas inventory and verification, progress in TCFD projects, and the 2030 greenhouse gas reduction targets.

¹ Our identification of high climate-related risk industries referenced domestic and international climate-related policies, regulations, and international sustainability disclosure regulations.

1-3 Climate-related training

Chang Hwa Bank

To facilitate sustainable finance, the Bank requires its employees to participate external professional training programs. These programs include financial sustainable transition talks as well as net-zero transition and climate change forums and training. The Bank aims to raise awareness of climate change risks and bolster the competencies of all employees.

In 2022, 165 employees at various levels below the Board of Directors participated in external training programs related to climate, ESG, and sustainability, totaling 1,132.5 hours.



02

Climate Strategy

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2-1 Climate Strategy

The Bank recognizes the key role financial institutions play in transitions to a sustainable and low-carbon economy, which facilitates corporate transitions through funding injection, financial products and services. Moreover, we place strong emphasis on climate-related risk management to ensure resilience in the face of climate-related risks. Regarding business operations, the Bank continues to promote initiatives such as energy conservation and carbon reduction, waste reduction, resource management, and green building, to achieve the goal of environmentally sustainable management.

Table2 Overview of low-carbon transition and development strategy

Strategies	Items	Development Goals	Corresponding Chapter
Climate risk management	Transition risk management	To enhance the management and response to climate risks within Chang Hwa Bank (and its subsidiaries), on December 29, 2022, the Board of Directors approved the inclusion of climate risks as part of overall risk management. A climate risk management policy was introduced to address the challenges posed by climate change. Climate risk factors are now incorporated into risk appetite, strategies, and business plans, including the identification and assessment of climate-related risks and opportunities. This enables the detection of the impact of climate risks on operational risks and enhances the resilience of response strategies.	3-3 Investment and financing risk management
	Physical Risk Management		3-3 Investment and financing risk management; 3-4 Operational risk management
Green finance	Low-carbon investment and financing	The Bank signed up to the SBTi in 2022 and is committed to aligning its daily operating activities with SBTi requirements. We actively review our carbon reduction strategies of our investment and financing portfolios and targets.	4-2 Green finance
	Products and services	We actively develop green financial products and services to seize climate-related opportunities and business prospects while leveraging our financial influence. We strengthen our support for the development of green industries by providing both capital and working fund to businesses in the green energy technology sectors, thus facilitating their low-carbon transition.	4-2 Green finance
Low-carbon operations	Operational carbon reduction	To mitigate climate change and limit global warming to 1.5°C, we have set targets to reduce greenhouse gas emissions of Category 1 and Category 2 by 42% by 2030 from to the 2020 base year. Furthermore, we encourage employees to implement energy-saving and carbon-reduction measures. We are progressively achieving our greenhouse gas reduction targets through initiatives such as complete replacement of LED lighting fixtures, carbon-neutral branches, and purchasing renewable energy and carbon credits.	4-3operating carbon reduction
	Value chain management, green procurement, and green buildings	To strengthen sustainability in the supply chain, we have been gradually expanding the scope of suppliers required to sign the "Corporate Social Responsibility Standards of the Supplier" in recent years. In our construction projects, Chang Hwa Bank incorporates water-saving, energy-efficient, and carbon-reducing designs, as well as the use of green building materials, to obtain green building certifications and minimize our environmental impact.	4-3Value chain management, green procurement, and green buildings
	R&D investments	Chang Hwa Bank has long been committed to digital financial innovations and "Bank4.0" online services, which integrates social media platforms to provide secure and convenient financial services. This will help expand our customer base while reducing operational carbon emissions.	4-3 R&D investment

The management objectives, specific implementation plans, and R&D expenses related to climate risks are included in 2023's budget. The main budget items include TCFD R&D, ESG-related professional services, and service fees for climate risk projects at the Hong Kong branch.



2-2 Climate issue identification and assessment process

To address climate change-related risks and opportunities, the TCFD task force considers the types of climate risk², time range, degree of impact, likelihood of occurrence, relevance with existing financial risks, and the nature of various business operations. The task force has established a climate risk identification process to annually identify and assess climate risks and opportunities, and regularly monitor the implementation progress in climate-related initiatives.

Figure3 Climate Risk and Opportunity Identification Process

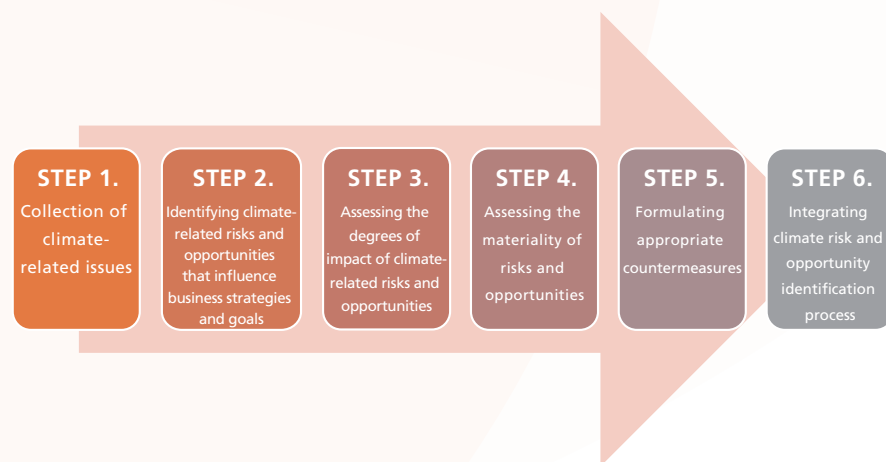


Table3 Climate Risks and Opportunities - time range

Time range	Short-term	Medium-term	Long-Term
Year	Less than 1 year	1 to 7 years	More than 7 years

² Climate change risks are primarily categorized into two major types: "physical risks" related to climate change and "transition risks" associated with the low-carbon economy. Physical risks are classified based on climate models into immediate extreme weather events or long-term climate pattern changes, while transition risks are further subdivided based on various influencing factors such as policy and regulatory risks, technological innovation risks, market structure changes, and reputational risks.

Table4 Climate risks and opportunities – Degree of financial impact

Degree of impact	Definitions
Mild	Financial impact or benefits less than NT\$10 million
Moderate	Financial impact or benefits between NT\$10 million and NT\$25 million
High	Financial impact or benefits between NT\$25 million and NT\$380 million
Significant	Financial impact or benefits between NT\$380 million and NT\$500 million
Critical	Financial impact or benefits exceeds NT\$500 million

The TCFD task force conducts an annual climate risk and opportunity identification process with qualitative and quantitative analyses. Based on the results, response strategies are developed for each risk and opportunity, with monthly monitoring and reporting to the Risk Management Committee and the Board of Directors.

2-3 Assessing the strategic resilience with scenario analysis

Scope and Boundaries of Scenario Analysis

As more than 72% of the Bank's net income for 2022 came from interest, we pay particular attention to the impact of climate change issues on borrowers.

Scenario analysis of transition risks in 2022, the Environmental Protection Administration (EPA) has published a list of companies that should inventory and register their greenhouse gas emissions, we took stock of listed CHB borrowers. The analysis aims to assess the potential impact of future policies and regulations on the operations of these borrowers and estimate the resulting credit risk loss for the Bank. In terms of physical risks, the analysis focuses on the Bank's business operations in Taiwan and the real estate collateral of all borrowers and observes the changes in climate Value-at-Risk (VaR) for these collateral properties in the years 2022, 2025, 2030, 2040, and 2050, aiming to quantify the potential impact of extreme weather events on asset impairment.

Table5 Scope of scenario analysis

Type of Risk	Type of business	Scope
Transition risk	Financing	Borrowers that are listed as emission sources required to register their greenhouse gas inventories to the EPA
Physical risk	Operating	Business operations in Taiwan
	Financing	All real estate collateral

Climate scenario setting

Transition risk	Physical risk
<p>CHB adopted the model of the Network for Greening the Financial System (NGFS) to select three scenarios: Net Zero by 2050, Delayed Transition, and Nationally Determined Contributions (NDC). These scenarios are used to estimate the carbon fees for borrowers listed by the EPA at three time points: 2025, 2030, and 2050. The analysis also evaluates the indirect potential financial impact on the Bank. Based on the results of the scenario analysis, we continue to mitigate climate-related transition risks by lowering the limits for carbon-intensive industries and enhancing the management of borrowers' transition plans and carbon reduction efforts.</p>	<p>The assessment took into account various types of climate-related disasters to calculate the potential loss for assets located in high-risk or moderately high-risk physical areas. Based on the results of the scenario analysis, we continue to mitigate climate-related physical risks by strengthening disaster prevention measures at business operations and inspecting real estate collateral.</p>

Table6 Applied scenarios

Organization	Timeframe	Adopted pathway	Temperature increase by the end of this century
UN Intergovernmental Panel on Climate Change (IPCC)	2022 、 2025 、 2030 、 2040 、 2050	RCP 2.6	~2°C
		RCP 8.5	>4°C
Network for Greening the Financial System (NGFS)	2025 、 2030 、 2050	Net-zero by 2050	~1.5°C
		Delayed transition	~2°C
		Nationally Determined Contributions	~2.5°C

Generally, higher emission scenarios (such as RCP8.5) are associated with higher physical risks, while striving for a lower-carbon economy entails higher transition risks (such net-zero by 2050). For the analysis results and corresponding strategies of this year, please refer to "3-3 Identifying the impact of transition risks on credit risk"; for physical risks, "3-3 Identifying the impact of physical risks on credit risk" and "3-4 Impact of physical risks on operational risks".



03

Climate risk management

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3-1 Incorporating climate risks into the standard risk assessment framework

In 2022, the Bank incorporated climate risks into its "Integrated Risk Management Policy". The Board of Directors approved the "Climate Risk Management Policy" to establish a comprehensive climate risk management process and enhance the management of climate-related risks.

By taking inventory of climate risks related to our operations and business activities, we have effectively implemented risk management through the three lines of defense within our risk management framework.

Figure4 The three lines of defense of the risk management framework

First line of defense: Risk-bearing unit

The risk-bearing unit is responsible for the daily management of operational risks and conducting self-assessments. The duties include identifying the sources of climate risks and assessing the extent of impact when they occur, as well as the implementation of risk aversion, reduction, and assumption measures to address these risks.

Second line of defense: Independent risk management unit

The independent risk management unit is responsible for risk monitoring, strategy development, and policy formulation to ensure the neutrality and consistency of the Bank in identifying, assessing, monitoring, and reporting risks. The unit should comply with relevant regulations of the supervisory authorities and consider climate risks that may affect the Bank. By utilizing methods such as scenario analysis, climate stress testing, and assessing the severity of exposures, the unit establishes appropriate management mechanisms to evaluate and measure climate risks.

Third line of defense: Internal audit unit

The Bank should establish appropriate audit procedures to routinely review the actual implementation of risk management in internal units. Any identified deficiencies or anomalies should be detailed in the audit report for continuous monitoring, and follow-up reports should be written.

While climate risk is treated as a standalone risk category within the Bank's overall risk framework, its connections with traditional financial risk categories is closely intertwined. The definitions of traditional risk categories and how they are influenced by climate-related physical and transition risks are described in Table 7.

Table7 Connections between climate risk and traditional financial risks

Risk item	Credit risk	Market risk	Operational risk	Other risks
Definition	The risk of losses arising from borrowers or counterparties being unable to fulfill their contractual obligations due to the deteriorating financial structure or other significant factors, including sovereign risk, corporate credit risk, individual credit risk, and financial counterparty credit risk.	Potential losses on positions on- and off-balance sheet that may arise from adverse changes in market prices. Market prices refer to interest rates, stock prices, exchange rates, and commodity prices, among others.	Operational risk refers to the risk of losses arising from inappropriate or erroneous internal operations, personnel, and systems, or from external events, including legal risks but excluding strategic risks and reputation risks.	The material risks that can affect the Bank in addition to the above risks, including but not limited to strategic risks and reputation risks. Although such risks are not easy to quantify, we should develop appropriate management procedures to reduce the risk of potential losses.
Transition risk	Certain industries may face increasing operating costs due to inability to comply with emerging climate-related regulations, and they may even have stranded assets. Customers may also see their credit quality affected if they do not take timely action to address climate-related issues, impacting their ability to reach their financial goals.	If a client's product becoming stranded assets, this may lead to significant fluctuations in the market values of the products or financial instruments.	If the Bank fails to comply with climate-related disclosure obligations or fails to adhere to emerging climate-related regulations and policy requirements, the Bank may lead to legal risks, including penalties or involved in legal proceedings.	If the Bank fails to comply with climate-related regulatory requirements or fails to achieve climate-related targets, it may affect our reputation and result in an increase in credit risks.



Risk item	Credit risk	Market risk	Operational risk	Other risks
Physical risk	Physical risks can directly damage clients' tangible assets such as factories, equipment, and business operations, or indirectly impact their existing business models and value chains, thereby increasing the default risk of clients.	Severe climate events may potentially impact a company's profitability, subsequently influencing its market and stock value.	Severe climate events may potentially impact the Bank's business operations and day-to-day operations.	–



3-2 Climate risk identification results

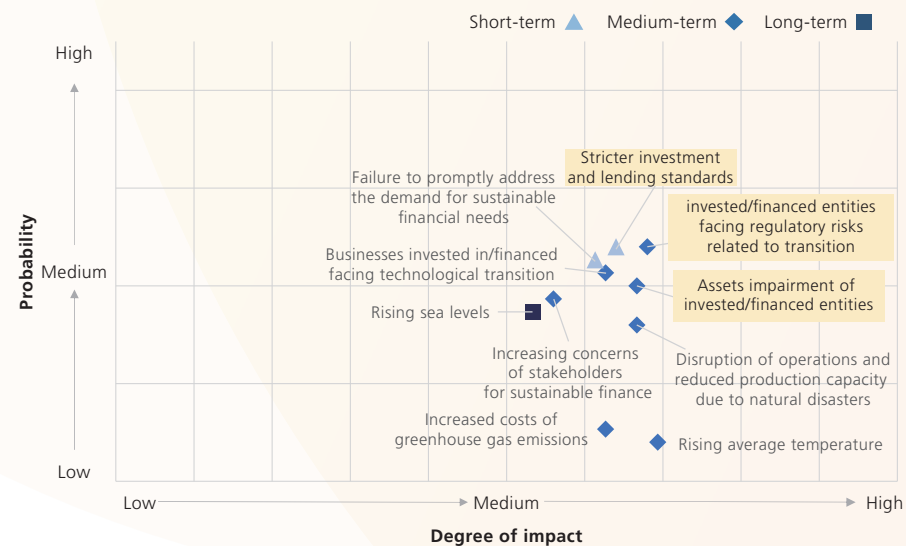
The Bank, as per the TCFD framework, taking into account the categories of climate risks and opportunities recommended by the TCFD, including immediate and long-term physical risks, as well as transition risks related to policy and regulations (including regulations and possible future emerging specifications), technology, market, and reputation, and the impact period throughout short-, medium-, long-term. In 2022, a total of 10 climate-related risks were identified, the materiality of which were ranked based on the multiplication of "probability of occurrence" and "impact level" as assigned by unit managers.

Table8 Identified issues of climate risks in 2022

Type	Risk Factor	Risk Event	Impact period	Connections to traditional risk	Description
Physical	Immediate	Disruption of operations and reduced production capacity due to natural disasters	Medium-term	Operational risk	Increasing severity and frequency of typhoons and torrential rains leading to operational disruptions.
		Assets impairment of invested/financed entities	Medium-term	Market risk, credit risk	The frequent occurrence of extreme weather significantly impacting the operations of investment/financing targets.
	Long-term	Rising average temperature	Medium-term	Operational risk	The increasing occurrence of extreme temperatures is expected to gradually raise future electricity prices, resulting in increased operating costs.
		Rising sea levels	Long-Term	Operational risk	Rising sea levels will cause business disruptions at business operations or lead to a decline in the value of owned real estate.

Type	Risk Factor	Risk Event	Impact period	Connections to traditional risk	Description
Transformation	Market	Failure to promptly address the demand for sustainable financial needs	Short-term	Other risks (strategy, reputation)	Lack of active promotion of sustainable/green financial products and services, resulting in business and customer attrition, leading to a decline in revenue.
	Technology	Businesses invested in/financed facing technological transition	Medium-term	Market risk, credit risk	The businesses invested in or financed by the Bank may face increased default risk due to the need for substantial investment in R&D personnel and expenses for their transition.
	Reputation	Increasing concerns of stakeholders for sustainable finance	Medium-term	Market risk, other risk (reputation)	Investor concerns over climate-related risks resulting in fundraising challenges for banks.
	Policies and regulations	Businesses invested in/financed facing regulatory risks related to transition.	Medium-term	Credit risk, market risk	The businesses attrition from tightening environmental regulations leading to increased operating costs for carbon-intensive industries.
		Stricter investment and lending standards leading to a loss of clients.	Short-term	Other risks (strategy, reputation)	Business attrition due to high carbon-emitting industries experiencing increased lending and investment thresholds.
		Increased operational costs as a result of rising costs of greenhouse gas emissions.	Medium-term	Other risks (strategy, reputation)	Increased operational costs for business operations due to stricter policies or regulations on carbon emissions.

Figure5 Climate-related risk matrix of 2022



For the top three identified climate-related risk factors, their impact on operations and business, along with corresponding mitigation measures, are presented in the following table:

Table9 Significant climate risk impact and mitigation measures in 2022

Rank	Risk Event	Impact period	Scope of impact	Traditional risk	Business impact	Degree of financial impact	Corresponding Measures
1	Businesses invested in/ financed facing regulatory risks related to transition.	Medium-term	Financing business Investment business	Market risk Credit risk	As demands for low-carbon industries onshore and offshore continue to rise, environmental regulations and policies have been formulated or revised in recent years, including carbon taxation/fees. This has resulted in increased operating costs for carbon-intensive industries, impacting profitability and potentially increasing default risks. If the Bank has a significant exposure to investments or loans in carbon-intensive industries, credit risks may also escalate.	High	Financing process takes climate factors into account by monitoring climate risks in carbon-intensive industries and understanding borrowers' decarbonization plans to mitigate potential expected losses. Refer to 3-3 Investment and financing risk management
2	Stricter investment and lending standards leading to a loss of clients	Short-term	Financing business Investment business	Other risks (strategy, reputation)	Recent years have seen global updates to energy conservation and carbon reduction environmental regulations and policies. These changes will impact the financial performance of carbon-intensive industries and large emitters. In order to manage associated risks, the Bank will enhance credit and investment thresholds for carbon-intensive companies. This may potentially reduce their willingness work with us, leading to a loss of business opportunities.	High	We continue to engage in low-carbon financing, develop green products and services, and support engagement activities to encourage businesses to transition to a low-carbon future. This enables us to seize transition opportunities and mitigate potential business losses resulting from abstaining from investment or declining contracts outright. Refer to 3-3 Incorporating climate screening and engagement into the lending process; 4-2 Green finance
3	Asset impairment of invested/financed entities	Medium-term	Financing business Investment business	Market risk Credit risk	Repayment difficulties and rising default risk for the financing companies due to decline in regional property prices where the collateral is located resulting in the devaluation of the collateral assets and reduced liquidity.	High	The Bank conducts routine reviews of the utilization of real estate collateral and discloses the outstanding loan balances and Non-Performing Loans of real estate collateral on a monthly basis, categorized by administrative regions in Taiwan, to the Risk Management Committee. To proactively assess the potential financial impact arising from physical risks, the Bank conducts scenario analyses to evaluate the vulnerability of real estate collateral to such risks. We plan to include collaterals located in medium to high-risk areas on our watchlist to monitor the completeness of disaster prevention measures taken by borrowers. Refer to 3-3 Identifying the impact of physical risks on credit risk

3-3 Investment and financing risk management

Climate-related risks in the financial industry primarily stem from investment and financing activities, and their potential impact should not be underestimated. To further fortify control measures for high climate-risk industries, we have implemented measures such as reducing limits for carbon-intensive industries and conducting climate risk monitoring on listed carbon-intensive borrowers. Additionally, the Bank assesses the potential impact of transition risks on borrowers' credit risks through scenarios involving carbon levies. This approach strengthens the control and monitoring of climate risks, while various mitigation actions are undertaken to minimize potential risks and financial losses.

Management of limits for carbon-intensive industries

The Bank closely monitors loan and investment activities involving carbon-intensive industries, tracking the daily utilization of limits and reporting the usage levels to the Risk Management Committee on a monthly basis. For cases that exceed the limits, the Bank establishes annual sustainability performance indicators, verified by third parties, as conditions and factors for future adjustments in interest rates and preferential loans, thereby encouraging businesses to increase their financing for green and sustainable development.

Identifying the impact of transition risks on credit risk

In view of Taiwan's Climate Change Response Act issued in February 2023, the Bank has conducted scenario analysis on carbon levies for industries including electricity, iron and steel, cement, semiconductor, TFT LCD, and petroleum refining industries, as well as those with annual greenhouse gas emissions exceeding 25,000 tons CO₂e from fossil fuel. A carbon fee of NT\$300 per ton is estimated for the National Determined Contributions (NDC) scenario. If a borrower is classified as a large GHG emitter, their financial soundness may be affected by the payment of carbon fees or allowances. The internal risk model assesses whether there is a potential downgrade in the credit rating of the borrower. The assessment of potential expected losses resulting from the increased credit risks for the Bank is as follows:

Figure6 Carbon fee scenario assessment process

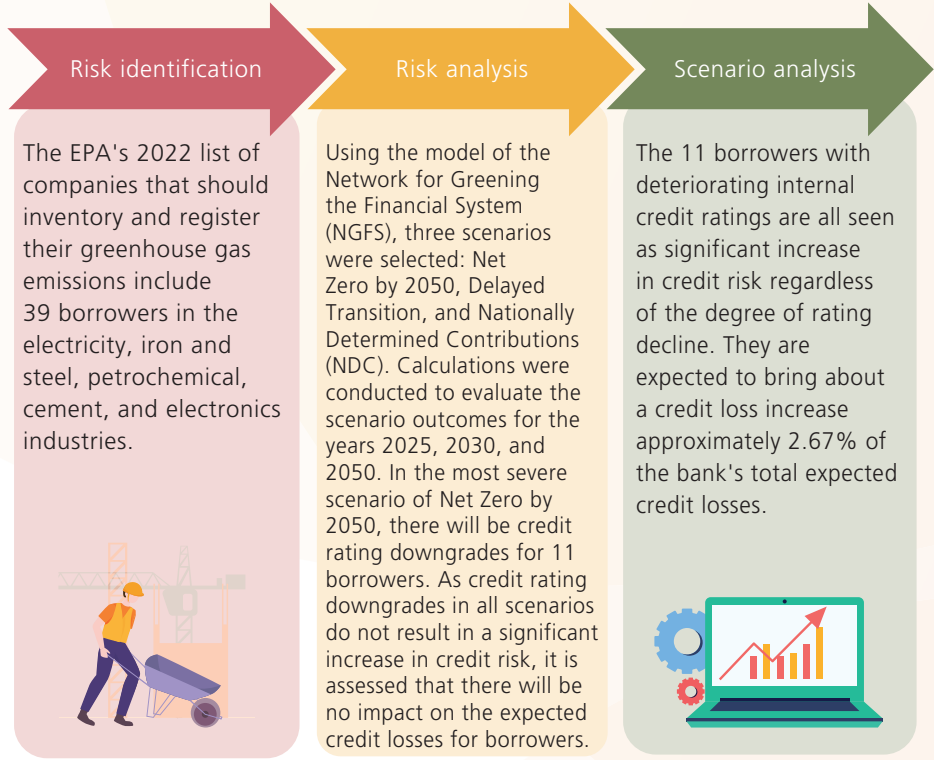


Table10 Internal model calculations - credit rating downgrade of borrowers

Year/Scenario	2025	2030	2050
Nationally Determined Contributions	2	2	2
Delayed transition	0	0	11
Net zero by 2050	8	9	11

In addition to conducting scenario and time horizon-based assessments of our own credit portfolio's transition risks, we also perform scenario analyses based on the "Operational Plan on Climate Change Scenario Analysis by Domestic Banks(2022 Edition)" issued by the Financial Supervisory Commission. The calculation covers domestic and foreign credit positions and banking book investment positions (bills, bonds and equity), and evaluates the expected credit risk losses as a percentage of net worth and pre-tax income for the base year.

Domestic Banks Conducting Climate Change Scenario Analysis

Reference principles for climate change scenario design from "Domestic Banks' Planning for Climate Change Scenario Analysis (Ver. 2022)":

Overall Economic Factors Setting:

The phase II scenario released by the Network for Greening the Financial System (NGFS) in 2021 is further divided into six scenarios based on different transition goals and assumptions. It currently adopts the MESSAGE-GLOBIOM 1.1 Integrated Assessment Model (IAM) for simulation and utilizes the "Net Zero 2050," "Delayed Transition," and "Baseline"(no transition measures taken) scenarios from the NGFS framework as the basis for overall economic factors.

Scenario category	Orderly transition		Disorderly transition		No transition/ Minimal transition	
Scenario name	Net Zero 2050	Below 2°C	Divergent Net Zero	Delay Transition	NDCs	Current Policies

Environmental factor settings:

The scenarios designed by the Intergovernmental Panel on Climate Change (IPCC) are used as the basis for environmental information. The data references are derived from the Representative Concentration Pathways (RCPs) scenarios from the Fifth Assessment Report (AR5). The IPCC's RCPs scenarios are generated using Global Circulation Models (GCMs) to capture the trends in environmental factors under climate change. It uses the "RCP2.6" and "RCP8.5" scenarios as the basis for environmental factors in various analytical scenarios.

Current climate scenario settings:

Taking into account the domestic transition status and the severity of climate risks, it establishes three scenarios for the subsequent analysis of climate change scenario. The time scale of climate change and the business cycles of the banking industry are also considered, with the time horizons of the scenarios in the 2030s and 2050s. Description of the scenarios:

1. 2050 Net Zero (Orderly) Transition: Corresponds to the NGFS's "Net Zero 2050" and the IPCC's "RCP2.6" scenarios and is used to assess the potential risks for the Bank in achieving a gradual and systematic transition towards net-zero emissions by 2050.
2. Disorderly Transition: Corresponds to the NGFS's "Delayed Transition" and the IPCC's "RCP2.6" scenarios and is used to assess the potential risks for the Bank in a situation where the transition towards net-zero emissions is delayed but still needs to be achieved by 2050.
3. Business-as-usual: Corresponds to the NGFS's "Baseline" and the IPCC's "RCP8.5" scenarios and is used to assess the potential risks for the Bank in a situation with no transition policies and the resulted climate change impacts.

Results of scenario analysis:

Percentage of expected credit risk loss of net worth and the base year's pre-tax income in the analyzed scenarios

In percentages

Percentage		Orderly Transition		Disorderly transition		Business-as-usual	
		2030	2050	2030	2050	2030	2050
Percentage of expected loss to base year's pre-tax income	Business Loan	66%	87%	66%	116%	61%	60%
	Personal Loan	4%	4%	6%	3%	4%	5%
	Investment-Banking Book	12%	17%	10%	25%	10%	10%
	Total	82%	107%	82%	144%	74%	75%
Percentage of expected loss of net worth	Business Loan	5%	7%	5%	9%	5%	5%
	Personal Loan	0%	0%	0%	0%	0%	0%
	Investment-Banking Book	1%	1%	1%	2%	1%	1%
	Total	6%	8%	6%	11%	6%	6%

Stress test results of the Hong Kong branch - transition risks

In keeping with the Hong Kong Monetary Authority's Pilot Climate Risk Stress Test, the Hong Kong branch uses the disorderly scenario developed by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) to assess transition risks. Under this scenario, the expected credit losses (ECL) for carbon-intensive industries in the loan portfolio are expected to increase from 1.11% to 2.78% by 2035, while for the bond portfolio, the expected credit losses (ECL) for the carbon-intensive industries are expected to increase from 0.07% to 0.24% by 2035.

Incorporation of climate risk monitoring and engagement into the credit process

The Bank recognizes the crucial role of financial institutions as key intermediaries and drivers of sustainable development. To further guide the flow of funds towards sustainable projects, starting from February 2023, additional assessments will be conducted to monitor climate risks for credit applicants who are listed for the year as emitters that should register their greenhouse gas inventories by the EPA or who fall under the definitions of our carbon-intensive industries. If the credit applicant is a publicly listed company and has not participated in any initiative organization or has not provided emission information, we will engage with them to request future disclosure of carbon emissions and reduction information, as well as encourage participation in initiative organizations. This aims to guide companies towards low-carbon transitions and achieve a balance between economic growth and environmental sustainability.



The Chang Hua Commercial Bank, Ltd. (Nanjing Subsidiary) includes environmental factors lending process and implements differentiated management.

As part of the lending process, The Nanjing Subsidiary conducts investigations and reviews of the corporate profiles of borrowers and guarantors. The analysis examined the following six aspects to see how climate change impacts the financial conditions and business operations of borrowers:

Items	Details of analysis
Fixed assets	Whether the company reduces carbon emissions by purchasing "greener" fixed assets or retrofitting existing ones.
Asset impairment	Whether the company's fixed assets, intangible assets, and inventory are subject to significant or potential impairment losses due to climate change.
Contingent liabilities	Failure to achieve climate targets may lead to onerous contracts due to taxation laws or climate-related regulations, which may incur contingent liabilities.
Government subsidies and tax exemptions	Whether the company meet the government's subsidy requirements for investing in environmental projects and activities.
Continuing operations assumptions	Companies should fully consider the impact of government actions and legislation on climate change on their continuing operations and disclose significant uncertainties regarding their continued operations.
Carbon offsetting	Carbon offsetting is a method for companies to offset their carbon emissions through investments in environmental projects. It should be analyzed whether the company has incurred expenses or assets accounting for carbon offsetting activities, and whether there are any liabilities associated with the company's investments in carbon offsetting activities.

Nanjing Subsidiary implements differentiated management on regional credit, exercising strict control over credit approvals for areas listed by the environmental authorities as "restricted regions" or "restricted basins," as well as regions where frequent public safety incidents occur due to inadequate local government management. The Subsidiary focuses on companies with high total pollutant emissions, high environmental risks, and significant impacts on ecology. For ten categories of borrowers belonging to heavily polluting industries, industries with severe overcapacity, and other sectors with major environmental, social, and governance risks, the Subsidiary requires them to complete the "Chang Hwa Bank Corporate Environmental Behavior Credit Scorecard." The Subsidiary implements a list-based management approach and carefully engages with borrowers who receive a final score with a blue rating. Loans are prohibited from being extended to borrowers rated yellow, red, or black.

Regular review of lower-carbon transition issues

During the regular review of investment positions, the Bank evaluates whether to reduce the holding percentage or divest from a particular investment if the associated costs incurred for industrial transition are irrecoverable and significantly impact revenue.

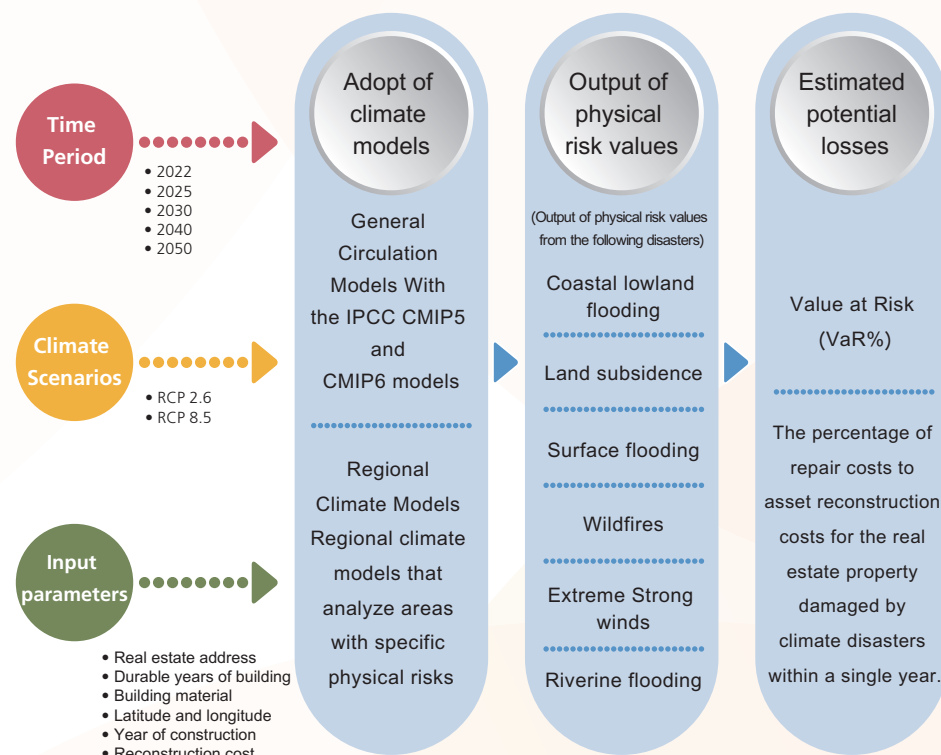
Chang Hwa Bank Venture Capital Co., Ltd. (CHBVC) also actively supports enterprise investments aligned with sustainability. As of the end of 2022, 23% of investments fall under "environmental sustainability" sectors.

Identifying the impact of physical risks on credit risk

Physical risk refers to the risk of severe asset damage caused by extreme weather events, leading to overall economic instability. Physical risks may affect and exacerbate traditional financial risks along the various business activities. For example, extreme weather events can disrupt the operations of borrowers or cause a decline in property values, leading to repayment difficulties and increasing the default risks for the Bank.

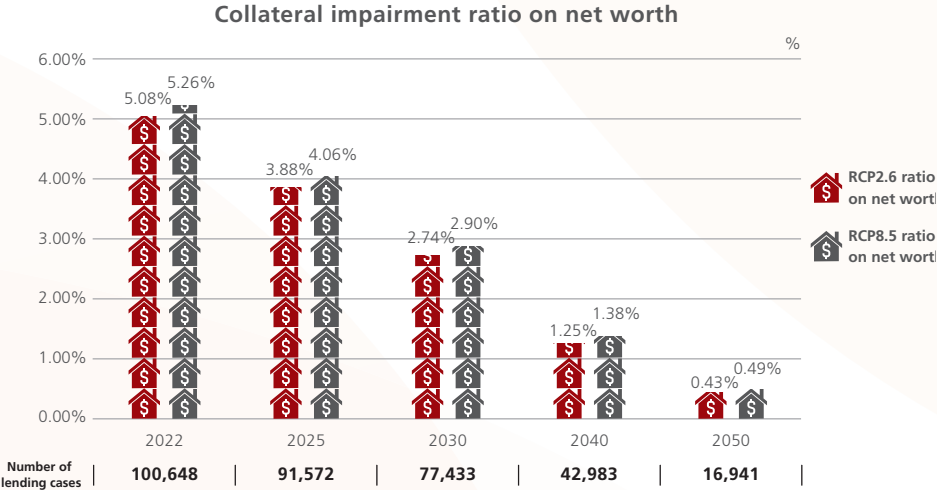
The majority of our credit portfolio is collateralized by real estate. In the event of climate-related disasters affecting the collateral, it may result in a decline in asset value and consequently increase the default risk of the borrowers. This year, the Bank expanded the scope of its physical risk analysis. Using the climate risk analysis database recommended by the United Nations Environment Programme Finance Initiative (UNEP FI), we assessed the climate Value-at-risk (VaR) for all real estate collateral locations in 2022, 2025, 2030, 2040, and 2050. The assessment takes into account the probability and amount of asset value impairment that may occur due to extreme weather events such as extremely strong winds, surface flooding, land subsidence, wildfires, riverine flooding, and coastal lowland flooding.

Figure7 Scenario analysis process for physical risks



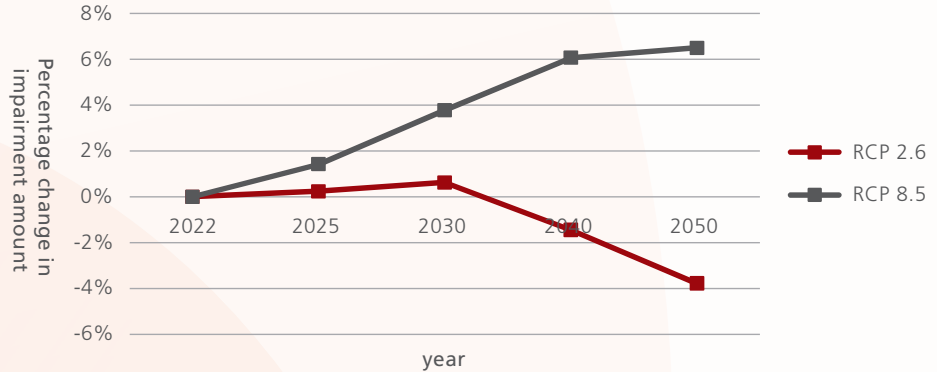
In 2022, the Bank evaluated the impact for approximately 100,000 real estate properties in Taiwan. Considering the loan term, the potential impairment impact from the analysis decreases over time. Impairment is the most severe under RCP8.5 by 2022, with an impairment of about 5.26% of net worth. By 2050, the impact amount has decreased to approximately 0.49% of net worth. The analysis of impairment amounts for different years and the number of borrowers is detailed in Figure 8.

Figure8 Financial impact of real estate collateral

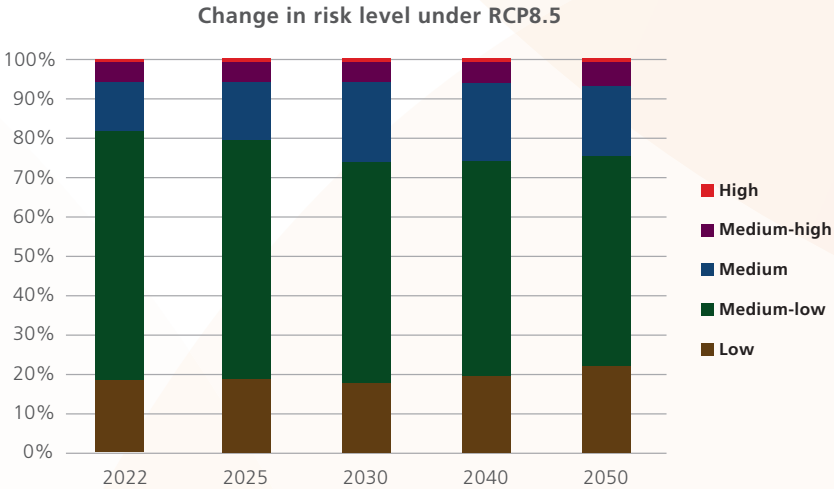
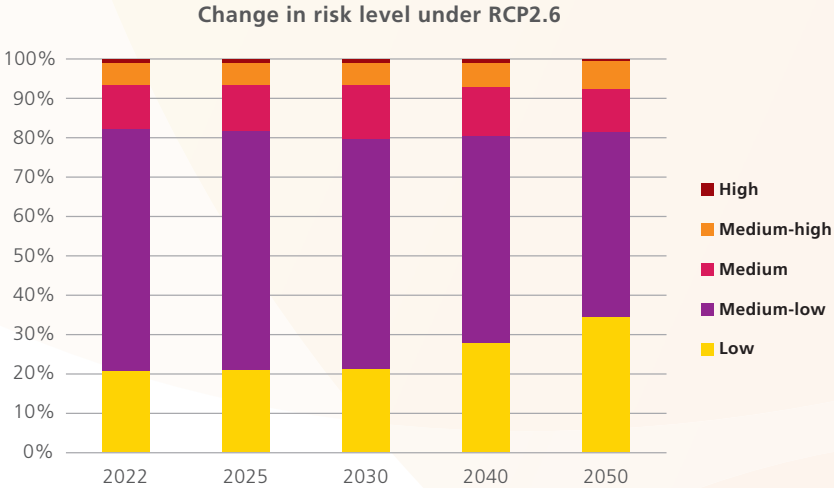


To accurately assess the trend of collateral impairment amounts, a further analysis was conducted on nearly 17,000 collateral assets from 2022 to 2050. The results depicted in Figure 9 indicate that under the RCP 8.5 scenario, the total impairment amount gradually increases over time. However, in the RCP 2.6 scenario, which entails stricter low-carbon transition activities, it can be observed that the total impairment amount gradually decreases over time.

Figure9 Trends in impairment of collateral held until 2050

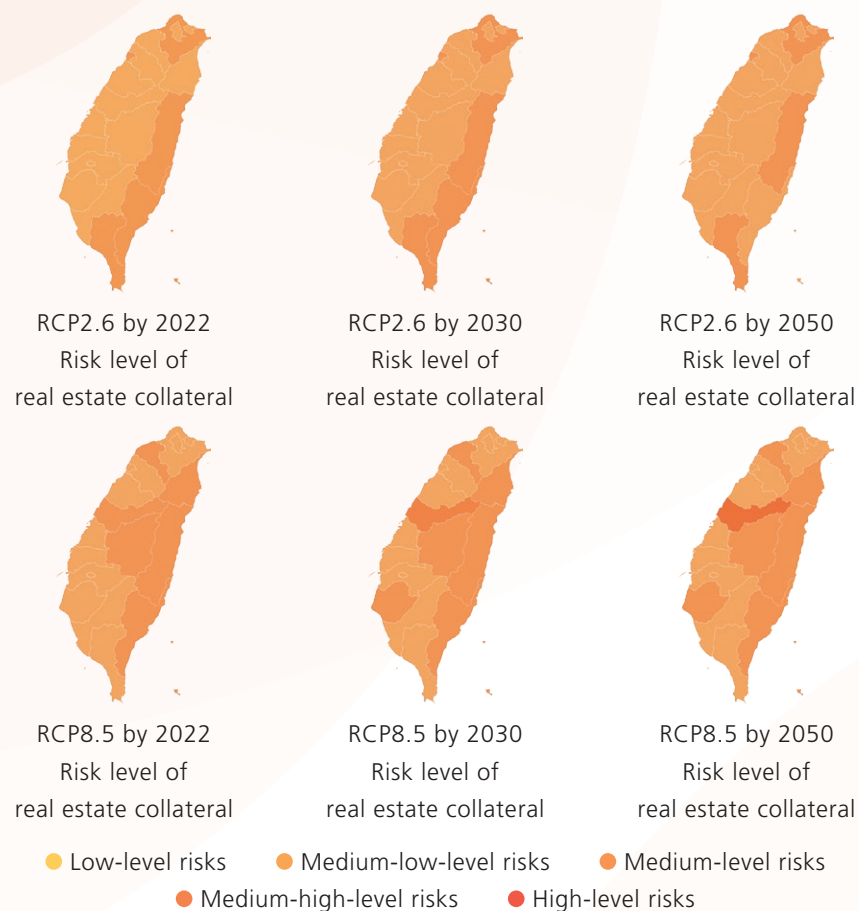


Climate value-at-risk(VaR) for real estate collaterals can be classified into 5 risk levels, with majority of collaterals falling under the medium to low risk category under both RCP2.6 and RCP8.5 scenarios. Between the two scenarios, a higher percentage of medium-low risk collateral was observed under the RCP8.5 scenario. However, in both scenarios, the percentage of low-risk collateral increased over time, leading to an overall reduction in risks.



The following figure illustrates the risk levels of counties and cities in Taiwan under the RCP 2.6 and 8.5 scenarios for the years 2022, 2030, and 2050. Under the RCP 8.5 scenario, the increase in risks level is most pronounced in central Taiwan. By 2050, Taichung City would be facing high-level risks.

Figure10 Map of potential disaster in the areas of real estate collateral



Considering climate change may reduce or damage the value of collateral, we disclose the outstanding loan balances and non-performing loans of real estate collateral by region on a monthly basis to the Risk Management Committee. We refrain from collateral susceptible to natural disasters such as windstorms, floods, and droughts and require regular reviews (at least once a year) of the utilization of real estate collateral.

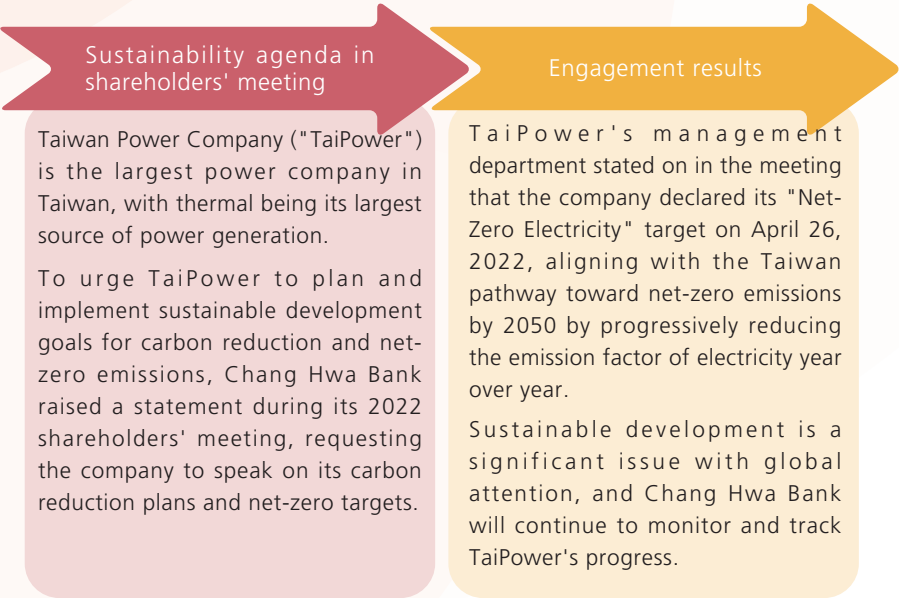
Stress test results of the Hong Kong branch - Physical risk

The Hong Kong Branch adheres to the Guidelines for Banking Sector Climate Risk Stress Test issued by the Hong Kong Monetary Authority and adopts the scenarios outlined in those Guidelines. Considering the RCP 8.5 scenario, which is typically regarded as the most severe physical risk scenario, and adopting the conservative approach, we utilize the IPCC's RCP 8.5 scenario in our climate risk stress testing. By evaluating the specific locations of real estate collateral held by credit borrowers, we have calculated that under such scenario, the stressed physical risk losses about 0.43% of the branch's net worth by 2050, increasing to 0.64% by 2060.



Engagement with investee companies

To promote the ideas and requirements of sustainability, the Bank values opportunities to communicate with investee companies. In 2022, during the shareholders' meeting of Taiwan Power Company, discussions were held on sustainability-related issues, and demands were made regarding carbon reduction plans and net-zero emission targets. Details of engagement:



Common engagement activities include participating in shareholders' meetings, earnings call, and correspondence and communication with investee companies. Overview of the interactions with investee companies in 2022:

Table11 Interactions with investee companies in 2022

Participation in investee companies' shareholders' meetings (number of times)	Participation in investee companies' earnings call (number of times)	Correspondences (number of times)
75	69	15

Carbon reduction planning for loan and the investment portfolio

Climate risk management in investment and loan portfolios includes additional climate risk monitoring and carbon fee scenario simulations for high-risk entities, taking inventory of carbon emissions in investment and financing positions, and assessing carbon asset risk exposure for investment and financing positions. In 2022, we have successfully signed the Science Based Targets initiative (SBTi) and will submit the greenhouse gas emission reduction targets for the Bank by June 2024. In terms of greenhouse gas emission reduction in our investment portfolio, relevant departments are actively developing corresponding reduction targets for key asset categories of the Bank.

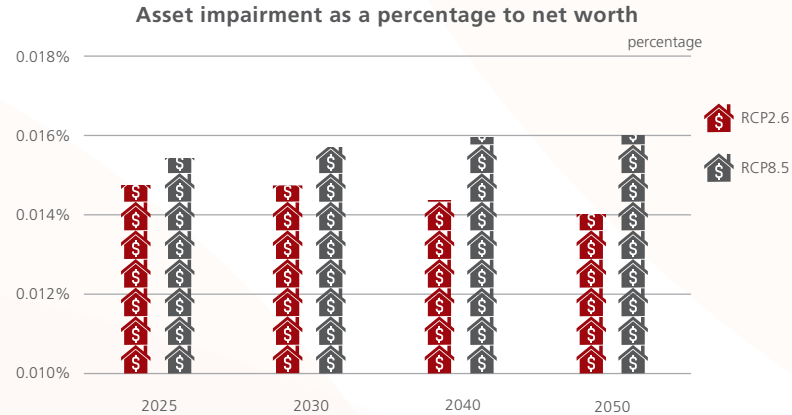
3-4 Operational risk management

Impact of physical risks on operational risks

The Bank's main source of revenue is banking-related business. We pay close attention to the climate risk posed to our branches. Situations such as typhoons and floods can result in water damage to assets and equipment, requiring repurchasing or even temporary suspension of operations. This may lead to a decline in operating income, and in more severe cases, it could cause a decrease in property values, resulting in impairment of our own assets. The 2022 assessment evaluated the impact caused by our business operations in Taiwan, indicating that under the RCP8.5 scenario in 2050, the asset impairment situation is most severe, with an impact about 0.016% of net worth.



Figure12 Financial impact on bank-owned business operations

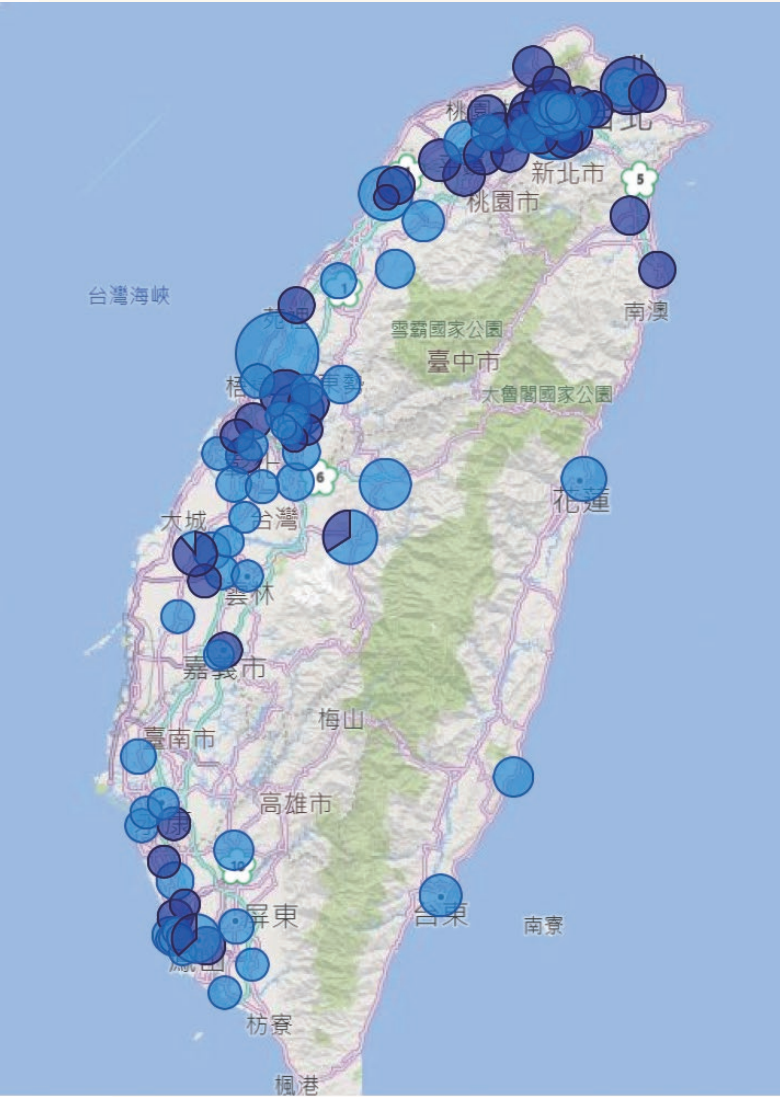


To bolster response to major climate-related disasters, the Bank has formulated the "Chang Hwa Bank Business Continuity Plan (BCP)" (covering all domestic and overseas business operations) to ensure that all units maintain normal operations in the event of an "operational interruption" due to climate change, extreme rainfalls, or other disasters. This is done to safeguard customer rights and minimize damages to personnel and assets. The BCP includes a section on "Disaster Protection and Emergency Measures." In the event of a climate-related disaster that results in the inability to promptly restore the computerised accounting systems or operate business premises, relevant units have contingency plans in place for reporting and response to prevent operational disruptions. Furthermore, the Bank has formulated adaptation plans prior to disasters for all branches identified in Figure 13, based on the location of business operations and their climate risk level of high, medium, or low. The adaptation plans are targeted for 2030 (with annual reviews), and includes measures such as increasing climate change adaptation and disaster prevention awareness. This involves sourcing sandbags, operating flood gates, conducting pre-flood drain inspections, and more. Future new branches will also undergo risk identification and implement climate change adaptation plans and awareness programs to mitigate the impacts of climate change or extreme rainfall.

In the event of operational disruptions, the relevant business management units are responsible for reviewing the causes and course of the incident. They should propose improvement measures or critical areas within the scope of their duties, and continually report the handling and improvement status to the management level. Procedurally, the Risk Management Division is responsible for monitoring the improvement plans of business management units. Based on the circumstances, the business management units may be required to report to the Risk Management Committee, which then consolidates the information in the quarterly "Risk Management Report" for submission to the Board of Directors.

In addition, the Bank conducts annual disaster prevention training and drills. The General Affairs Division plans and supervises the implementation by all units. The business units are responsible for safety maintenance tasks and carry out regular inspections per the Bank's "Safety Maintenance Inspection Report" to address any deficiencies and make necessary improvements.

Figure13 Value-at-Risk of business operations by region, under the RCP 8.5 scenario (at the end of the 21st century)



● Owned operational site ● Leased operational sites

Note: Circle size represents the magnitude of risk values

04

Managing Climate Impact

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The Bank continues to develop green financial products and services, and has introduced numerous green loans in support of the government's initiatives in promoting green energy industries and facilitating low-carbon transitions. In respect to operations, we actively implement carbon reduction measures through equipment replacement, green procurement, and the purchase of renewable energy. We also promote digital financial services, expanding our customer base while reducing carbon emissions.

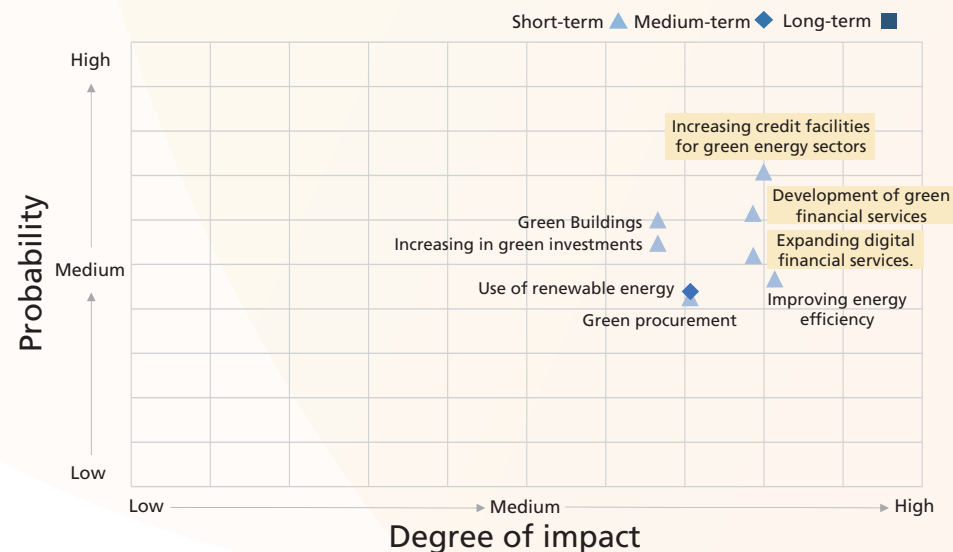
4-1 Identified climate opportunities

The Bank follows the TCFD framework, taking into account its recommended climate opportunities. A total of 8 climate-related opportunity topics were identified in 2022, ranked by materiality as follows:

Table 12: Climate opportunities

Type	Opportunity	Impact period	Description
Resource efficiency	Green procurement	Short-term	We prioritize equipment procurement with certifications for energy efficiency and water conservation to save resources and protect the environment.
	Improving energy efficiency	Short-term	Replacing outdated lighting or air conditioning systems with LED or advanced air conditioning equipment to reduce operational costs and reduce greenhouse gas emissions.
Resource efficiency and resilience	Green Buildings	Short-term	Using green building materials and sustainable design to improve the efficiency of architectural energy and resources.
Products and services	Development of green financial services	Short-term	Develop low-carbon products and services and provide green financial services.
	Increasing credit facilities for green energy sectors	Short-term	Developing credit clients in the green energy technology sector to not only enhance resilience to climate risks but also create opportunities in the green economy.
	Expanding digital financial services.	Short-term	Developing digital financial services to reduce paper use and save operational costs.
Market	Increasing in green investments	Short-term	The investment portfolio has increased exposure to climate -related products, creating green business opportunities.
Source of energy, resilience	Use of renewable energy	Medium-term	Business operations are equipped with solar power facilities and procure renewable energy to enhance resilience to climate change risks.

Figure 14: Climate-related opportunity matrix for 2022



As per the results of the questionnaire, we identified three major climate change opportunities. The opportunity events and their impacts are presented in the table below.

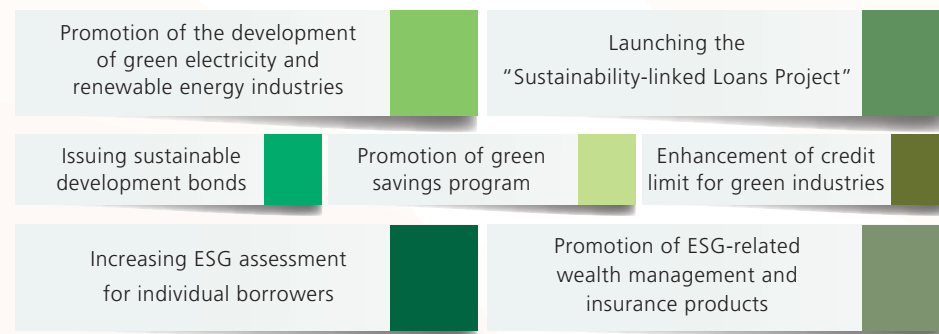
Table 13: The top three significant climate opportunities of 2022 and countermeasures.

Rank	Opportunity	Time range	Scope of impact	Business impact	Degree of financial impact	Corresponding Measures
1	Grant loans to green energy industries	Short-term	Financing business	Attention to climate issues is steadily increasing domestically and overseas, with a growing recognition of the importance of the development of the green energy industry for low-carbon transition. The green energy industries will require significant financial investment. By expanding green financial products and services, opportunities can be seized, leading to revenue growth.	Significant	In line with the competent authority's "Program for Promoting Six Core Strategic Industries" for green electricity, renewable energy, and green enterprise loan projects, we have expanded the limit for green industry financing by 1%. This initiative aims to provide financial support to enterprises involved in green production and services. We will continue to develop credit relationships with clients in the green energy technology industry through financing. Refer to 4-2 Facilitating the development of green electricity and renewable energy industries; 4-2 Increasing the credit limit for the green industry.
2	Development of green financial services	Short-term	Own operations Investment business	As attention towards climate issues steadily rises domestically and overseas. Due to climate initiatives and regulatory requirements, entities are compelled to actively pursue low-carbon transitions, leading to an increased demand for relevant funding. Expanding green financial products and services will enable us to seize business opportunities and increase revenue.	High	Continuously developing green products and services to address international sustainable finance trends and support to national policy initiatives, seizing emerging business opportunities. Refer to 4-2 Green finance
3	Expanding digital financial services.	Short-term	Own operations	In recent years, digital finance has been a focal point in the financial industry. Mature digital financial services not only attract more customers but also reduce unnecessary carbon emissions, contributing to the sustainable environmental development.	High	Refer 4-3 Research and investment

4-2 Green finance

The Bank drives industry transition and the green economy through financial measures for low-carbon transition. We guide customers in practicing green consumption and living, while protecting their rights. Our green finance initiatives are as follows:

Figure 15: Green finance initiatives



Facilitating the development of green electricity and renewable energy industries.

We provide the necessary funding for operations and construction to recognized "Green and Renewable Energy Industry" by competent authorities. We also continue to develop new products and services to meet the corporate green financing needs, such as loans for solar photovoltaic equipment installation, offshore wind power projects, and Sustainability-linked Loans.

Loans for green electricity and renewable energy industry

Since April 2022, to align with the competent authority's "Program for Promoting Six Core Strategic Industries", we have been assisting the authorities in facilitating access to both capital and working fund for the recognized Green Electricity and Renewable Energy Industries. In 2022, the number of loans granted to the green electricity and renewable energy industries amounted to 3,007 accounts, with a loan balance of NT\$129.2B. Furthermore, since 2020, the Bank has participated in 4 syndicated loans for renewable energy projects, acting as the lead arranger in 3 of them.

Table 14: Green industry and renewable power generation loans in the past 3 years.

In NT\$ millions/account

Item	2020		2021		Item	2022	
	Loan balance	Number of accounts	Loan balance	Number of accounts		Loan balance	Number of accounts
Loans for green energy technology industry ⁴	70,241	1,285	79,322	1,543	Loans for green electricity and renewable energy industry	129,236	3,007
Loans for renewable power generation industry ⁵	3,017	133	3,444	160	Loans for renewable power generation industry	3,207	173

⁴ The Bank assists the green energy technology industry recognized by competent authorities in participating in procurement projects for the Forward-Looking Infrastructure Development Program or by providing the capital and working fund needed to engage in the green energy technology industry.

⁵ In line with the government's initiatives on non-nuclear homes and renewable energy policies, we actively support the renewable power generation industry in obtaining the necessary funding for their operations. Clients who have obtained the approval letter for renewable power generation equipment from the Ministry of Economic Affairs' Bureau of Energy, or the registration letter for renewable power generation equipment, are eligible to apply for relevant loans. Among renewable energy sources, solar power generation is relatively mature. We offer loan projects for the installation of solar photovoltaic equipment to provide funding for businesses and individuals seeking to purchase the necessary equipment for solar power generation.

Low-carbon Sustainable Homeland Project Loan – Replacement of Large Diesel Vehicles

Per EPA's Low Carbon Sustainable Home Program, we offer loans for the replacement of large diesel vehicles to 6 accounts with a loan balance of NT\$94M as of the end of 2022.

Financing for the offshore wind power industry

In line with government policies to reduce carbon emissions and enhance energy independence, we actively assist the offshore wind power industry in obtaining the necessary funding for development, equipment acquisition, and operations. Loan commitment statistics for the past 3 fiscal years are as follow:

Table 15: Financing for the offshore wind power industry over the past 3 years

In NT\$ millions/account

Items	2020		2021		2022	
	Amount approved	Number of accounts	Amount approved	Number of accounts	Amount approved	Number of accounts
Financing for the offshore wind power industry	726	1	2,189	1	900	1



Launching the business of "Sustainability-Linked Loans Project"

To support the sustainable development of enterprises, the Bank has launched the program of "Sustainability-Linked Loans Project" from 2022. For companies listed on the stock exchange, over-the-counter market, emerging stock market, or those with public offerings, this program utilizes publicly available information on indicators such as "greenhouse gas emissions management," "carbon reduction performance," "electricity management," "energy consumption," and "waste reduction," offering a reduction in interest rates to corporate customers who meet any sustainability performance indicators. By the end of 2022, there were 39 borrowers, with a total approved credit limit of NT\$34.135 B, accounting for 4.52% of the total amount of medium- to long-term corporate loans.



Increasing the credit limit for the green industry

To support the value chain of renewable energy and other green industries and assist relevant businesses in obtaining funding, the Bank increased credit limits for green industries in 2023.

Table 16: The Bank's List of green industries

Industry type	
Petroleum, chemical material, and product manufacturing	Transportation equipment and parts manufacturing
Rubber and plastic product manufacturing	Electricity and Gas Supply
Non-metallic Mineral Products Manufacturing	Construction engineering
Basic Metal Manufacturing	Industrial product wholesale
Fabricated Metal product manufacturing	Logistics and Warehousing
Electronic parts and component manufacturing	Service industry
Electrical equipment manufacturing	Water supply and pollution control
Machinery equipment manufacturing	



Nanjing Subsidiary – green lending

The Nanjing Subsidiary aims to promote green lending and increases support for key projects in energy conservation, environmental protection, clean energy, energy-efficient technology upgrades, new energy R&D and marketing, circular economy, and low-carbon economy, in accordance with local industrial policies, credit policies, and environmental requirements.

Launching the green deposit project

For corporate customers who have the demand of green financial products, the Bank introduced the "Green Deposit Project" in 2022. The funds raised will be utilized for green credit projects such as financing for renewable energy projects, green buildings, electric vehicles, waste-to-energy power plants, wastewater treatment facilities, and related infrastructure, aiming to support the development of financed enterprises while driving low-carbon transitions.



ESG-related wealth management and insurance products

To promote sustainable development in society, we actively introduce wealth management products that incorporate ESG factors into investment scopes or decision-making processes. We sell onshore and offshore fund, foreign bond, foreign stocks/ETFs, and investment-linked product related to climate change, including but not limited to low carbon emissions, carbon neutrality, energy transition, and green bonds.

Table 17: ESG-related Wealth Management and Insurance Products

In NT\$ dollars and percent

Product	ESG-related product volume	Overall product volume	ESG-related product ratio
Onshore and Offshore Fund	6,914,568,106	104,640,763,496	6.61%
Foreign Bond	3,647,277,128	4,297,342,684	84.87%
Foreign stocks/ETF	265,049,724	1,712,987,356	15.47%
Investment-linked Product	1,391,565,677	3,218,334,056	43.24%
Total Amount	12,218,480,635	113,869,427,592	10.73%

In response to extreme weather conditions, we continue to promote sustainable insurance products, such as residential fire insurance that provides compensation for typhoon or flood damages. This offers policyholders basic insurance coverage and mitigates climate change risks, resulting in positive benefits for sustainable development.

Table 18: Revenue and product percentage of residential fire insurance in the past 3 years

In NT\$100millions

2020		2021		2022	
Total revenue	Product ratio	Total revenue	Product ratio	Total revenue	Product ratio
1.38	16.70%	1.51	17.86%	1.53	17.90%

Issuance of sustainable development bonds

To develop sustainable finance, the Bank has been actively issuing and investing in sustainable development bonds in recent years. The investment amount at the end of 2022 has increased by 40% compared to 2021. We successfully issued a 5-year sustainable development bond amounting NT\$1 billion in 2023.

Table 19: Total investment in sustainable-related bonds over the past 3 years.

In NT\$100 millions



Item	2020	2021	2022
Green bond	37	33	34
Sustainable development bond	11	0	17
Socially Responsible Bond	0	12	0
Sustainable development-linked bond	0	0	12
Total Amount	48	45	63



Nanjing Subsidiary promotes green finance products and services

In keeping with the regulations and requirements of regulatory authorities in mainland China, such as the "Green Finance Evaluation for Banking and Financial Institutions" and the "Green Finance Guidelines for Banking and Insurance Industries," the Nanjing Subsidiary has issued and implemented the "Chang Hwa Bank Green Loan Statistical Management Regulations" and the "Chang Hwa Bank Green Bond Guidelines" to promote green finance-related investment and financing activities.

4-3 Low-carbon operations

To address climate change and align with national greenhouse gas reduction policies, we have implemented Environmental Management System (ISO 14001), Energy Management System (ISO 50001), and Water Efficiency Management System (ISO 46001). Our goal is to limit global warming to below 1.5°C. With 2020 as the base year, we have established a carbon reduction target to reduce Category 1 and 2 greenhouse gas emissions by 42% compared to 2020 levels by 2030.

Operational carbon reduction

Electricity is our primary emission source, contributing 87% of carbon emissions, followed by approximately 8.9% from fuel usage in official vehicles. We have set environmental sustainability targets to reduce at least 1% in relevant indicators compared to the base year. For detailed information on carbon emissions, energy, and water resource reduction targets, please refer to Section 5, Climate metrics and targets.

The Bank continues its ongoing program to replace outdated equipment, upgrading lighting and outdated air conditioning systems, after which we expect to reduce 510,000 kWh annually.

Renewable energy and Carbon credit planning

To progress towards net-zero by 2050, the Bank has set targets for renewable energy utilization rate, renewable energy certification, and carbon credit purchases.

Planning to increase green energy usage by 10,000 kWh annually, we contracted with power suppliers in 2022 and planned to cumulatively use 600,000 kWh of green energy between 2022 and 2026. We anticipate achieving the long-term target of increasing our renewable energy utilization rate to 10% by 2030 through installing solar power generators and procuring green energy.

We also plan to annually offset our branches' carbon emissions from Category 1 to 5 by purchasing carbon credits that meet the international Gold Standard, thereby establishing carbon-neutral branches. The plan is to purchase carbon credits annually starting from 2030 and offset the carbon emissions of five branches, thereby expanding the number of carbon-neutral branches. The Changhua Branch has officially become the first carbon-neutral branch of the Bank, as verified by the British Standards Institution (BSI) PAS 2060 Carbon Neutrality Standard on July 18, 2022.



Value chain management, green procurement, and green buildings

Value chain management

The Bank upholds the spirit of local procurement, giving priority to local partner suppliers, ensuring supply chain stability, localization, and promoting local employment opportunities. The Bank established the "Sustainable Procurement Policy" in 2021 to mitigate procurement risks and enhance innovation opportunities in an effort toward sustainable supply chain management. The Bank is also certified for ISO 20400:2017 compliance the same year.

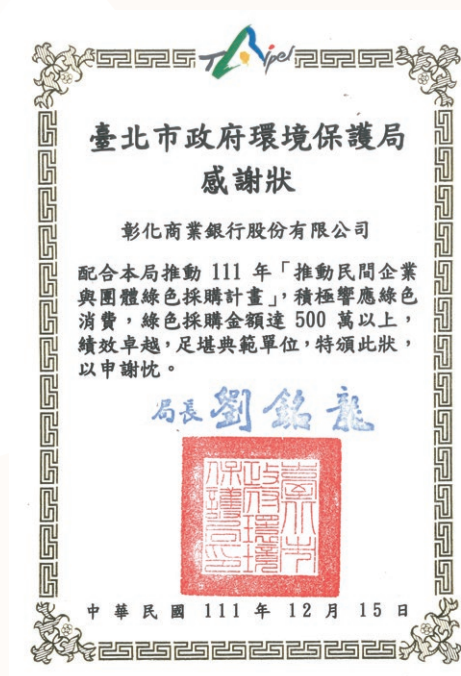
We participated in the Government-owned Financial Institution Joint Supplier Conference, aiming to extend ESG and sustainable development principles to suppliers and borrowers through the collaborative initiatives of Government-owned financial institutions.

Table 20: Provisions related to suppliers signing the Social Responsibility Commitment Statement in 2022.

No.	Items	Unit	Description
1	Transaction amount threshold for suppliers.	NT\$	800,000
2	Number of suppliers signing the Supplier Social Responsibility Commitment Statement	Number of suppliers	61
3	Number of suppliers of the Bank	Number of suppliers	61
4	Percentage of supplier signatories	Percentage (%)	100%
5	Total amount of procurement cases with signed "Supplier Social Responsibility Commitment Statement".	NT\$	504,257,480
6	Total purchase amount in 2022	NT\$	504,257,480
7	Percentage of procurement amount with signed "Supplier Social Responsibility Commitment Statement".	Percentage (%)	100%

Green procurement

The Bank prioritizes procurements of environmentally friendly products with eco, carbon, energy-saving, water-saving, green building material, and sustainable forestry labels, in order to minimize environmental impact. Green procurement increased from 2021, reaching NT\$25.57M in 2022. We have also received commendations from the Taipei Environmental Protection Bureau for five consecutive years, recognizing our outstanding performance in "Private Enterprise and Organization Green Procurement."



Green Buildings

The Bank also reduces operational carbon through green building planning. The current goal for the Bank's new premises and new proprietary premises or buildings that are involved in urban renewal projects (such as the Peimen Branch, Chengtung Branch, the Tianjin Street dormitory, the Chiencheng Building, and the Yuanli Branch) is to obtain the "Green Building Labeling (EEWH Labels)". The Peimen Branch will comply with the urban renewal project in 2023 and obtain the silver-level of EEWH.

R&D investments

The Bank has long been committed to digital financial innovation and launched the "Bank 4.0" online business, allocating funding annually to support the development of digital financial services. The Bank's digital financial services are shown in the table below:

Table 21: Digital financial services

Item	Description
Online banking	Continuous digitization of our services to enhance convenience of online banking transactions, reduce paper-based operations at our branches to minimize carbon emissions
Digital deposits (Online account opening)	Taiwanese adults and minors can apply for digital deposit accounts online and upgrade their account transaction permissions, eliminating the need for in-person account opening and travels to the bank.
Online loaning	The eLoan online loan platform is one-stop-shop digital financial service that prioritizes customers and their digital journeys with paperless and mobile initiatives, reducing carbon emissions associated with service processes.
Mobile payment (Including CHB Wallet and digital payment)	<p>Customers can directly link their accounts online, enabling them to use QR codes for seamless online transactions. The notification feature can instantly inform the recipient of the transaction.</p> <p>Customers can convert their deposit accounts into virtual mobile card numbers online. By downloading the Taiwan Mobile Payment app, they can make payments or fund transfers through various methods such as online transactions, near-field communication (NFC), barcode or QR code scanning.</p> <p>Customers can link their CHB accounts with electronic payment services for transactions, top-ups, and bill payments without the need to travel to a branch.</p>
Online ATM	The dedicated "Online ATM" webpage, available to both customers and non-customers of Chang Hwa Bank, offers a wide range of financial services, including e-counter, e-payment, and e-tax payment. Customers can enjoy convenient, paperless financial services using chip-enabled financial cards and card readers, eliminating the need to visit a branch, reducing waiting time, and minimizing paper receipt printing.

As indicated below, the Bank has shown a continuous increase in the percentage of digital financial services. We will continue our emphasis on developing digital financial services to meet market demands and reduce operational carbon emissions.

Item	2021	2022
Percentage of electronic transactions	64.22%	67.00%
Number of e-statements sent	4,446,935	5,553,416
Cumulative transacted amount (in NT\$) for payment services, online ATMs, and collection services.	26,526,607,745	38,912,309,354



05

Climate metrics and targets

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The Bank actively supports to the global trend of low-carbon transition, aligns with national policies, and directs funds towards green industries and sustainable economic activities to construct a more comprehensive green finance system.

We have signed the Science Based Targets initiative (SBTi) commitment in 2022. In addition, we are setting short, medium, and long-term goals to drive the transition to a low-carbon economy and align our business development strategy with the targets of the Paris Agreement.

The summary of climate-related metrics for the Bank is as follows. For detailed information and action plans for each metrics, please refer to the subsequent sections in this chapter.

Table 22: Metrics

Category	Metrics	Description	Unit	2020	2021	2022
Operations	GHG Emissions ⁶	Category 1 and 2 Greenhouse Gas Emissions	Tons of CO ₂ e	17,158.302	16,361.208	17,091.793
	Electricity consumption	Implemented ISO 50001 Energy Management System, with electricity consumption as the indicator.	kWh	29,326,120	28,711,779	27,889,555
	Water consumption	Implemented ISO 46001 Water Efficiency Management System, with water consumption as the indicator.	m ³	163,944	160,777	147,532
	Green procurement	Amount of green procurement	NT\$ million	30.98	24.91	25.57
Investment and financing portfolio	Green loans	Balance of loans for green electricity and renewable energy industries.	NT\$ million	–	–	129,236
		Approved loan limit for offshore wind power industry	NT\$ million	726	2,189	900
	Green industry investment	The Balance of green industry equity or green bonds, whose investment projects are related to climate, environmental protection, energy conservation, and carbon reduction.	NT\$ 100 million	58.7	91.7	117.7
	Green deposit project	Assisting depositors in directing funds towards green projects.	NT\$ 100 million	–	–	26
Investment and financing portfolio ⁷	Physical asset risk exposure in climate scenarios [VaR%]	Implementing a climate risk analysis database to regularly assess and monitor changes in exposure in high- physical risk areas.	NT\$ million	<ul style="list-style-type: none"> Business operations: The RCP8.5 scenario in 2050 predicts the most severe asset impairment, with an estimated impact of approximately 0.016% to net worth. Real estate collateral: Annual assessment of asset impairment under high climate risk scenarios will be conducted through a database. 		
	Carbon emissions of the investment and financing portfolio ⁸	Carbon emissions of investment and financing portfolios are inventoried with the PCAF methodology, and changes in indicators are observed	Tons of CO ₂ e	1,133,555	1,031,326	1,433,353
	Carbon footprint ⁹	Tons of CO ₂ e equivalent generated per NT million of investment and financing balance.	Tons of CO ₂ e/ NT\$ million	3.8	3.0	1.7
	High-carbon asset impairment.	The percentage of high-carbon emission industries in the total value in our investment and financing positions, used to assess the vulnerability of industries facing higher transition risk.	%	14.8%	13.8%	14.8%
	Inventory boundary	The percentage of our investment and financing positions in the total balance.	%	19.06%	20.2%	46.74%

⁶ The scope of the greenhouse gas emissions inventory for categories 1 and 2 included all domestic business operations from 2020 to 2021. In 2022, it was expanded to include all overseas business operations and subsidiaries. In 2022, the total carbon emissions of all domestic business operations was 16,093.745 tons of CO₂e.

⁷ The data on investment portfolio carbon emissions, carbon footprint, and exposure to carbon-intensive assets for 2020 and 2021 differs from the previous year's TCFD report due to the exclusion of sustainable development bond positions from the calculation. This is consistent with the calculation scope for 2022.

⁸ In 2022, the scope of inventory was expanded to include assets such as unlisted stocks, mortgage loans on properties, and vehicle loans. As a result, the carbon emissions from the investment and financing portfolio increased.

⁹ The expansion of inventoried asset categories in 2022 has led to a significant decrease in carbon footprint.

The short-, medium-, and long-term targets set by the Bank include:

Table 23: Targets

Category	Target	Base year, scope	Short-term targets	2022 achievements	Medium- and long-term targets	Action plans for future strategies	Management method
Operation	Reduction of greenhouse gas (GHG) emissions	Category 1 and 2 for all domestic business operations during 2020	<ul style="list-style-type: none"> Reduced carbon emissions by an average of 4.2% per year 	<ul style="list-style-type: none"> The Bank's total carbon emissions reduced 6.2% during 2022 compared to 2020.¹⁰ 	We have signed the SBTi commitment and set targets to limit global warming to 1.5°C. By 2030, the Bank aims to reduce greenhouse gas emissions from Category 1 and 2 by 42% compared to 2020.	<ul style="list-style-type: none"> Continuously promote environmental sustainability related international standard inspection activities. Keep annual records on the usage of water, electricity, fuel, natural gas, and other resources. Review these records regularly and conduct environmental impact assessments to identify improvement targets and track progress through management plans. 	We conduct annual assessments of greenhouse gas emissions to evaluate the progress towards our targets. For the years where the targets are not met, we perform analysis and implement improvement measures.
	Environmental sustainability indicators (including electricity consumption and water usage)	2020	<ul style="list-style-type: none"> Electricity consumption or water usage in 2023 reduced by 3% compared to 2020. 	<ul style="list-style-type: none"> Electricity consumption reduced by 4.9% compared to 2020. Water usage reduced by 10.01% compared to 2020. 	By 2030, all environmental indicators decreased by more than 10% compared to 2020.		From 2023, records will be conducted on a semi-annual basis to enhance monitoring and control effectiveness.
	Renewable energy usage	1% renewable energy utilization rate ¹¹ targeted for 2023		In 2022, achieved the goal of purchased and supplied 100,000 kWh of green energy with a renewable energy utilization rate of 0.36% ¹²	<ul style="list-style-type: none"> 5% renewable energy utilization rate by 2025. 10% renewable energy utilization rate by 2030. 	<ol style="list-style-type: none"> Branches have installed solar power systems to generate their own electricity. Green energy purchase is expected to reach 1 million kWh. 	Monthly green energy usage and the number of certificates obtained are tracked through monthly green energy payment notices from renewable energy sales or power generation companies.
	Renewable energy certificates	2020	1% increase target over the previous year	2022 saw the purchase of 100 renewable energy certificates, an 11.11% increase from 2021.	Obtaining an additional 10 renewable energy certificates each year is equivalent to increasing green energy usage by 10,000 kWh annually.		

¹⁰ In June 2022, we signed a commitment to Science Based Targets initiative (SBTi). With the base year of 2020, we independently set the target of a 42% total reduction from Category 1 and Category 2 emissions by 2030. In 2022, the total emissions from all operational sites in Taiwan amounted to 16,093.745 tons of CO₂e, down 6.2% from 2020's 17,158.302 tons.

¹¹ Renewable energy utilization rate (%) = Green energy usage (kWh) / Total annual energy consumption (kWh) * 100%

¹² Renewable energy utilization rate (%) for 2022 = 100,000 kWh (green energy usage in 2022) / 27,889,555 kWh (total electricity consumption across all operating locations in Taiwan) * 100% = 0.36%



Category	Target	Base year, scope	Short-term targets	2022 achievements	Medium- and long-term targets	Action plans for future strategies	Management method
	Carbon credit	We purchase annual carbon credits to offset the carbon emissions of one branch to build a carbon-neutral branch.		On July 18, 2022, the Changhua Branch became the first carbon-neutral branch, verified with the British Standards Institution (BSI) PAS 2060 carbon neutrality standard.	The plan is to purchase carbon credits annually starting from 2030 and offset the carbon emissions of five branches, thereby establishing carbon-neutral branches.	We plan to select branches with significant emissions reduction potential to transition into carbon-neutral branches based on the PAS 2060 carbon neutrality standard or other internationally recognized carbon neutrality standards. The process includes developing carbon neutrality plans, purchasing carbon credits from national and international carbon trading platforms, and offsetting greenhouse gas emissions. Our goal is to achieve five carbon-neutral branches per year.	We contract external verification organizations to conduct external verification per PAS 2060 or other internationally recognized carbon neutrality standards. The verification results will be publicly disclosed on our website as our carbon neutrality declaration.
Investment and financing portfolio	Financial carbon emissions reduction	Carbon emissions of investment and financing portfolios are calculated with PCAF methodology. Currently, reduction targets are being set for key asset categories based on the SBT methodology.			Specific carbon reduction implementation guidelines will be established to gradually achieve the carbon reduction targets.		The TCFD Task Force tracks progress on a semi-annual basis.
	Limits on carbon-intensive industries and green industries.	2022	Reduction in the limits for carbon-intensive industries and increase in the limits for green industries.	The credit and investment limits for carbon-intensive industries will be lowered to 89%. For green energy technology industries identified by competent authorities and green production industries, the credit limit will be increased by 1%.	We will continue reducing the limits for carbon-intensive industries while increasing the limits for green industries.	The objective in the introductory phase is to annually lower the percentage for carbon-intensive industries by 1% while increasing the limits for green industries by 1%. Adjustments will be made in accordance with the SBTi carbon reduction pathway and the carbon emission reduction targets for investment and financing portfolio we submit.	Industry limits adjustments are the responsibility of the Risk Management Division and are subject to annual approval by the Board of Directors. An incentive system is in place to encourage business units to undertake green industry credit cases. For more details, please refer to 5-8 Incentive system.
	Investment in industries related to "environmental sustainability". (CHBVC)	2022	–	4 cases (7 total investments in industries related to "environmental sustainability" as of the end of 2022.)	We will engage in at least 2 new investments per year in industries related to "environmental sustainability". Carbon reduction related industries include energy-saving (electric vehicle supply chain), green energy (solar, wind, or hydroelectric power generation), circular economy (development of new environmentally friendly materials, reusable material, recycling, and reuse), and other businesses contributing to carbon emission reduction. Environmentally sustainable industries include soil and wastewater remediation, wastewater and gas treatment, waste recycling and reuse, and other businesses that make tangible contributions to environmental protection.		Results are reported regularly to the managing Board of Directors of the parent company on a semi-annual basis.

5-1 Greenhouse gas emissions data

The organizational boundaries of the Bank's greenhouse gas inventory are defined in accordance with the operations control approach. To increase the scope and possibility of future carbon reduction measures, since 2020, we conducted independent third party verification as per the new version of the standard to track the effectiveness of energy conservation and carbon reduction efforts, aiming to achieve the greenhouse gas emission reduction targets we set. Scope and data of GHG emissions in the past 3 years are as follows:

Table 24: GHG inventory data

		2020	2021	2022
Category 1 emissions ¹³ (metric tons of CO ₂ e)	Domestic business operations	2,231.307	1,947.895	1,897.961
	Overseas business operations and subsidiaries	–	–	177.058
	Total	2,231.307	1,947.895	2,075.020
Category 2 emissions ¹⁴ (metric tons of CO ₂ e)	Domestic business operations	14,926.995	14,413.313	14,195.783
	Overseas business operations and subsidiaries	–	–	820.990
	Total	14,926.995	14,413.313	15,016.773
Total carbon emissions (Category 1 + Category 2) (metric tons of CO ₂ e)		17,158.302	16,361.208	17,091.793
Inventory boundary of total carbon emissions		82.2%	82.2%	100%
Verification boundary of total carbon emissions		82.2%	82.2%	100%
Carbon emissions intensity (Category 1 + Category 2) / Revenue (Tons of CO ₂ e/NT\$1000)		0.00063	0.00057	0.00050
Category 3 emissions ¹⁵ (metric tons of CO ₂ e)		5,242.152	5,244.309	4,727.668
Category 4 emissions ¹⁶ (metric tons of CO ₂ e)		7,541.974	8,077.079	9,602.441
Category 5 emissions ¹⁷ (metric tons of CO ₂ e)		239.003	266.894	229.763
Inventory boundary of carbon emissions for categories 3 to 5.		82.2%	82.2%	89.7%
Verification boundary of carbon emissions for categories 3 to 5.		82.2%	82.2%	89.7%

¹³ Category 1 emissions ("Scope 1" in ISO 14064-1:2006) primarily comprise emissions from the combustion of fuel in official vehicles, diesel generators, gas, natural gas, as well as emissions from greenhouse gas extinguishing agents, refrigerant-filled equipment, and septic tanks.

¹⁴ Category 2 emissions ("Scope 2" in ISO 14064-1:2006) are of emissions from purchased electricity generation.

¹⁵ Category 3 emissions are indirect greenhouse gas emissions caused by transportation, including employee work trips, employee commutes, and transportation of consumables for business use.

¹⁶ Category 4 emissions are indirect greenhouse gas emissions related to the products purchased for the organization, including the emissions of consumable products and information assets during their lifecycles, incineration of general waste, and transportation of recycled waste.

¹⁷ Category 5 emissions are indirect greenhouse gas emissions in the downstream of the products manufactured by the organization, including the disposal of debit cards and credit cards.

Greenhouse gas reduction performance in 2022

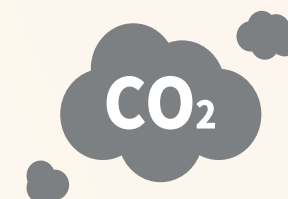
The SBTi commitment was signed in 2022, and the reduction targets are expected to be submitted to SBTi by June 2024. For Category 1 and Category 2 carbon emissions, with the base year of 2020, the short-term target is an average annual reduction of 4.2% in total carbon emissions. The long-term target is a 42% reduction by 2030.

In 2022, the total greenhouse gas emissions from all operating locations in Taiwan were 16,093.745 metric tons of CO₂e, a 6.2% reduction from the base year of 2020 (17,158.302 metric tons of CO₂e). See (II) Use of energy and water resources for the implementation results of the Bank's greenhouse gas reduction actions and energy and resource management measures.

Table 25: Greenhouse gas reduction performance

Items	2020	2022	
	Base year	Actual results	Target
Total Carbon Emissions (metric tons of CO ₂ e) ¹⁸	17,158.302	16,093.745	15,717
Actual carbon reduction rate (%)		6.2	8.4

¹⁸ Total carbon emissions are the sum of the carbon emissions of categories 1 and 2.



5-2 Use of energy and water resources

With the ongoing intensification of global warming, we estimate that the frequency of extreme heat waves or hydrological extremes will increase, posing heightened physical risks. Extreme heat waves may also lead to increased electricity consumption for air conditioning, thereby raising operational costs of the Bank. To mitigate the impacts of the aforementioned risks, the Bank has implemented international standards such as ISO 50001 Energy Management System and ISO 46001 Water Efficiency Management System to enhance the management of energy and water resources.

Energy management

We continue to drive energy-saving initiatives and daily management with a focus on reducing electricity consumption. In 2022, a total of 62 actions were taken on lighting fixtures and air conditioning systems in offices and business units. The energy-saving impact from lighting replacements resulted in a reduction of approximately 360,000 kWh¹⁹, while the energy-saving impact from air conditioning measures amounted to a decrease of around 150,000 kWh²⁰. Additionally, the Bank encourages its employees to actively participate in energy-saving initiatives. In 2022, the Bank's electricity consumption reached 27,889,555 kWh, representing a reduction of approximately 4.9% compared to 2020.

Table 26: Energy usage data

Types of energy	Consumption unit	2020 (Base year)	2021	2022	
				Actual results	Target
Electricity	kWh	29,326,120	28,711,779	27,889,555	28,739,598
	MWh	29,326	28,712	27,890	28,740
	MJ ²¹	105,574,033	103,362,403	100,402,398	
	Statistical boundary ²²	82.2%	82.2%	89.7%	
Electricity intensity	MJ/person	15,814	15,637	15,035	

¹⁹ The calculation methods for energy conservation and carbon reductions of replacing lighting:

- The wattage of the outdated lighting of the Bank was between 40W and 80W. The new lighting is between 20W and 40W. Therefore, assuming a 50% increase in energy efficiency of the new lightings, the energy saved (kWh) = Power of the new lightings (W)/(1-50%) * hours used per year (hr) * number of lights (lamps)/1,000.
- Carbon reductions (tCO₂e) = energy saved (kWh) * electricity emission factor (0.509kgCO₂e/kWh)/1,000.

²⁰ The calculation methods for energy conservation and carbon reductions of replacing lighting:

- Assuming a 30% increase in energy efficiency of the new air conditioning system, the energy saved (kWh) = Power consumption of the new AC system (W)*30%/(1-30%).
- Carbon reductions (tCO₂e) = energy saved (kWh) * electricity emission factor (0.509kgCO₂e/kWh)/1,000.

²¹ 1 kWh = 3.6 MJ.

²² The statistical boundary encompasses all domestic business operations.

Water resource management

To enhance water resource efficiency, the Bank has established regulations and measures to reduce water waste.

In 2022, the Bank's water consumption decreased to 147,532 m³, about a 10.01% reduction from 2020.

Table 27: Water usage data

Water	Consumption unit	2020 (Base year)	2021	2022	
				Actual results	Target
Water consumption	m ³ ²³	163,944	160,777	147,532	160,665
	Million m ³	0.1639	0.1608	0.1475	0.1607
	Statistical boundary ²⁴	82.2%	82.2%	89.7%	

²³ 1 m³ of water = 1 cubic meter of water.

²⁴ The statistical boundary encompasses all domestic business operations.



Energy resource management at the Nanjing Subsidiary Branch

Nanjing Subsidiary Bank has undertaken the following initiatives since 2021 to promote energy and water conservation:

- To actively fulfill our commitment to energy conservation and environmental protection, the per capita electricity consumption of the subsidiary bank (including branches) has been decreasing annually in keeping with China's carbon neutrality and peak carbon emissions strategies. As of the end of December 2022, the per capita electricity consumption was 329 kWh, a 41 kWh savings from the same period in 2021.
- Adjusting water flow of the tap valves in the staff pantry and restrooms can enhance energy-saving efficiency. The per capita water consumption of the subsidiary bank (including branches) has been decreasing annually. As of the end of December 2022, the per capita water consumption stood at 1 ton, resulting in a savings of 0.4 tons from the same period in 2021.

5-3 Internal Carbon Pricing

In 2022, the Bank implemented an internal carbon pricing model for "lighting fixtures" as part of the procurement decision-making process, which uses a shadow pricing approach to calculate carbon reduction, taking into account the carbon fee rate announced by competent authorities (NTD 1,500 per ton). Considering our business profile, Category 2 accounts for nearly 90% of emissions, with lighting and air conditioning representing about 80% of electricity consumption. The bank conducted equipment replacement benefit analysis and will develop greenhouse gas-related policies and carbon pricing procedures. Future assessments will also include air conditioning equipment to further facilitate carbon reduction efforts at the Bank.



5-4 Financial carbon emissions data

The Bank adopts the methodology of PCAF (Partnership for Carbon Accounting Financials) to calculate carbon emissions of its investment and financing portfolio, including Listed equity and corporate bonds, Business loans (for large enterprises), commercial real estate, and project finance. This approach aims to actively explore opportunities for greenhouse gas reduction within this scope. In addition, in 2022, we expanded inventoried asset categories to include calculations for unlisted stocks, mortgages, and motor vehicle loans, aiming to gradually achieve a comprehensive calculation of financial carbon emissions.

Emissions from our investment and financing portfolio by asset over the past 3 years are as follows:

Figure 16: Carbon Emissions of the investment and financing portfolio by asset over the past 3 years

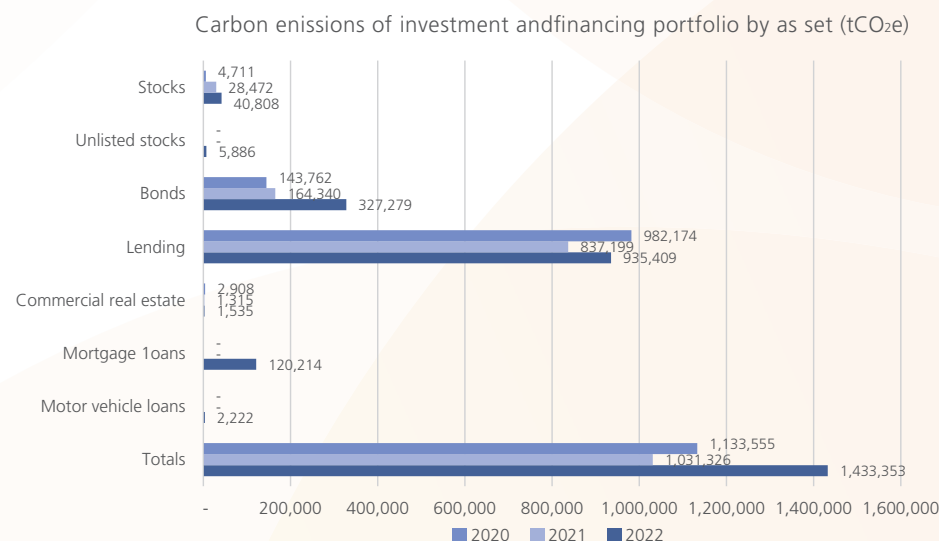
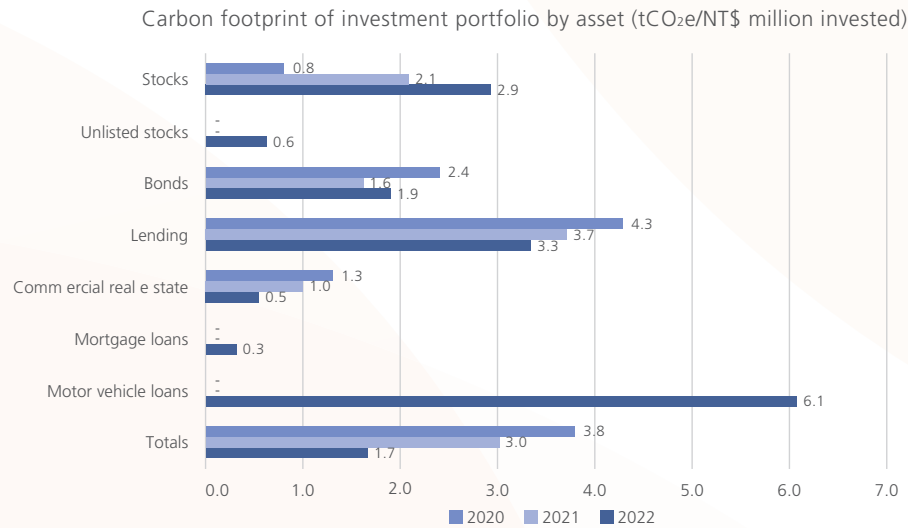


Figure 17: Carbon footprint of the investment and financing portfolio by asset over the past 3 years



In 2022, the total carbon emissions from our investment and financing portfolio amounted to 1,433,353 tons of CO₂e. Carbon inventory as a 46.74% of our investment and financing portfolio. A gap analysis on equity, bonds, Business loans, and commercial real estate over the past two years observes a 26.5% increase in absolute carbon emissions for these asset categories in 2022, totaling 1,305,031 metric tons of CO₂e, from the 2021 level of 1,031,326 metric tons of CO₂e. However, the carbon footprint improved from 3.0 in 2021 to 2.79 (metric tons of CO₂e per NT\$ million).



Based on 2022's calculations of the investment and financing portfolio carbon emissions by industry, the top three sectors in terms of absolute carbon emissions are "raw materials," "industrial services," and "non-core consumer services," accounting for 27.6%, 13.9%, and 10.1% of the total emissions, respectively. Further analysis of the carbon footprint within our investment and financing portfolio (carbon emissions allocated per NT\$ million invested/financed) reveals that the highest carbon footprint is associated with "non-core consumer services," followed by "oil and gas," and "raw materials" at 12.03, 9.90, and 9.16 metric tons of CO₂e/NT\$ million respectively. The carbon footprints of all other industries remain below 4 metric tons of CO₂e/NT\$ million.

Figure 18: Carbon emission breakdown by industry and country

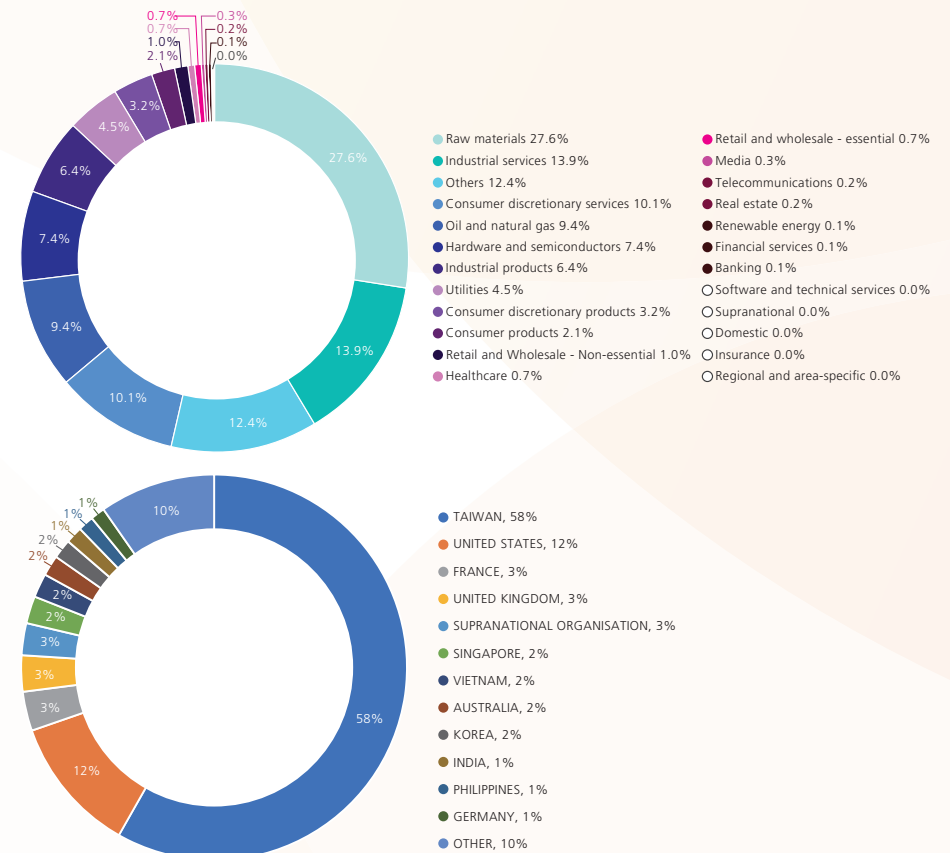


Figure 19: Carbon Emissions of the investment and financing portfolio by asset in 2022

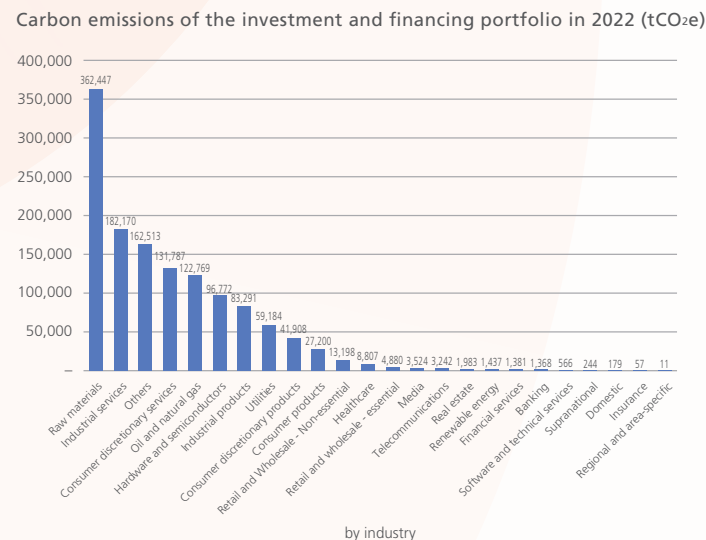
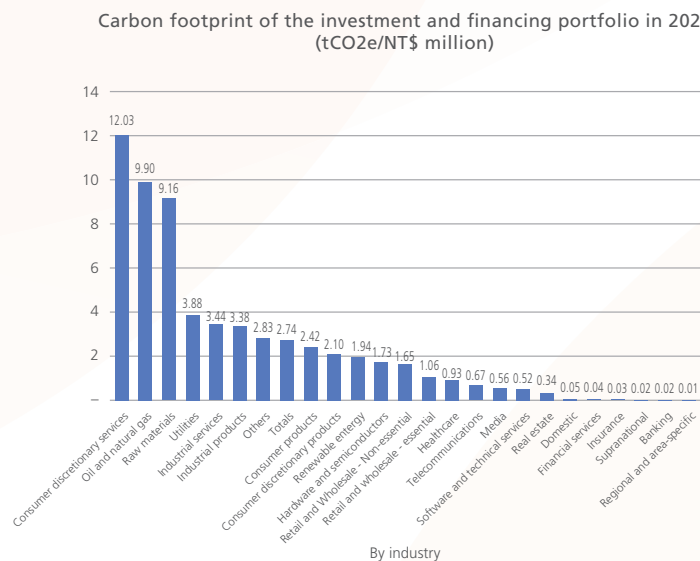
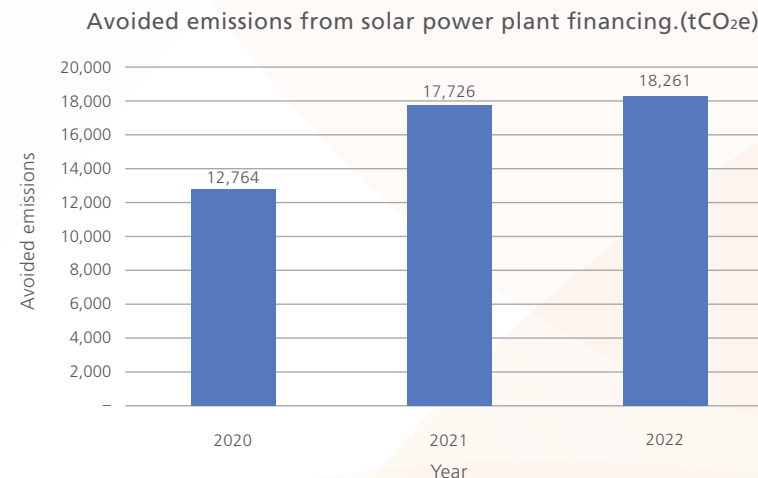


Figure 20: Carbon footprint of investment and financing portfolio by asset in 2022



In addition to accounting for carbon emissions from investment and financing activities, the Bank also takes inventory of the avoidable carbon emissions from its renewable energy financing projects. As shown in the chart below, the Bank has been increasing its financing projects year by year, resulting in an increase in avoidable emissions reaching 18,261 metric tons of CO₂e in 2022.

Figure 21: Avoided emissions from financing projects

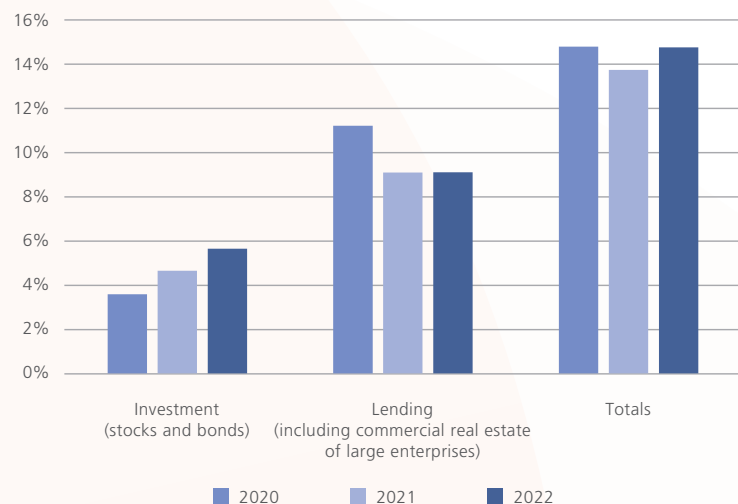


5-5 Carbon-related assets

The Bank used the list of carbon-intensive industries approved by the Board of Directors in 2022 to calculate the exposure of these industries for limits planning purposes. In 2022, the exposure of carbon-intensive industries in our investment and financing positions was 14.77%.

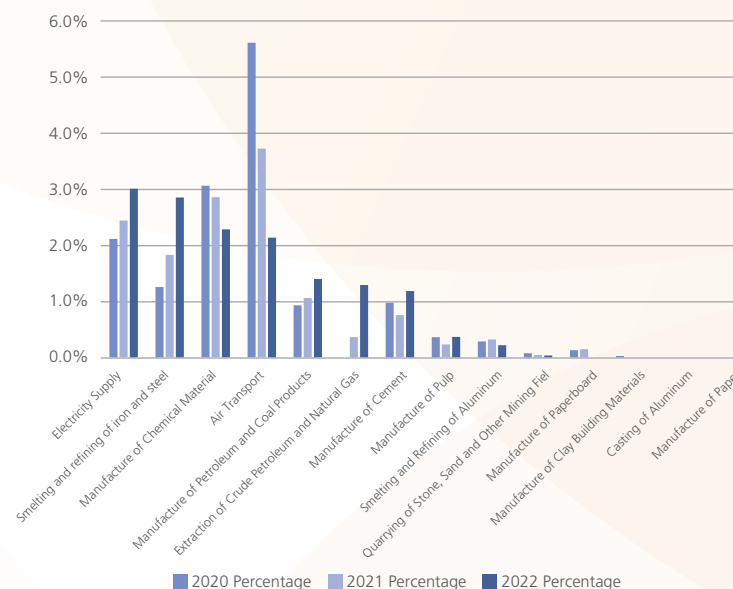
The Bank also analyzed the proportion of carbon-intensive industries in the investment and loan positions over the past 3 years by asset and by industry. Observing the proportion of carbon-intensive industries in the overall investment portfolio, there is a trend of increasing proportion in the investment positions over the past two years; however, the proportion of carbon-intensive industries in loan positions remains the same as in 2021. Compared to 2020, there is a slight decrease in the proportion of carbon-intensive in both investment and loan positions.

Figure 22: Proportion of carbon-intensive industries in the total investment and loan positions by asset.



By further analyzing the exposure ratios of different carbon-intensive industries²⁵, it can be observed that in recent years, the industries with higher exposure ratios are "electricity supply", "smelting and refining of iron and steel", "manufacture of chemical materials", and "air transport". Investment/financing in the first two has seen yearly decreases, with the air transport industry experiencing the most significant decline. On the other hand, the investment and financing in "electricity supply" and "smelting and refining of iron and steel" have been increasing in proportion year by year²⁶. The Bank will use the results as the basis for policy and positional adjustments. For more information on the establishment and limit planning related to carbon-intensive industries, please refer to 3-3 Investment and financing risk management.

Figure 23: Proportion of carbon-intensive industries in the total investment and loan positions by industry.



²⁵ The scope of the exposure to risks from carbon-intensive industries calculated is that of our investment and financing portfolio.

²⁶ The Bank did not have any exposure to aluminum casting and paper manufacturing from 2020 to 2022. We did not have any exposure to manufacture of clay building materials between 2021 and 2022. In addition, We did not have exposure to paperboard manufacturing in 2022.

5-6 Overview of the investment and financing in carbon-intensive and green industries

Table 28 Percentage of loans to carbon-intensive and green industries in the overall outstanding medium- and long-term loans to corporate clients over the past three years.

Items	2020	2021	2022
Carbon-intensive industry	8.44%	8.43%	8.04%
Green industry	13.48%	12.35%	11.86%

In 2022, the proportion of carbon-intensive investments in the portfolio slightly increased from 2021. This was mainly due to aligning with national policies and investing in bonds issued by state-owned companies, providers of key energy sources, thereby supporting their low-carbon transition. Additionally, responsible investment principles were followed during the investment process by reviewing their ESG performance.

Table 29 Proportion of investments in carbon-intensive industries over the past 3 years.

In %

Carbon-intensive industry	2020	2021	2022
Stock position	2.01%	1.36%	0.86%
Bond position	8.73%	5.86%	7.81%
Total	10.74%	7.22%	8.67%

Table 30 presents the investment amounts in green industries over the past three years, demonstrating a year-on-year increase in investment, highlighting our commitment to supporting the development of green industries.

Table 30 Investment balance in green industries over the past three years.

In NT\$100 millions

Green industry	2020	2021	2022
Stock position	7.17	10.49	12.21
Bond position	33.50	87.15	103.44
Total	40.67	97.64	115.65

5-7 Green financial products and services

In recent years, the Bank has been developing and promoting green financial products and services. These include green loans for corporate transitions and the development of green energy industries, syndicated loans for renewable energy projects, preferential loans linked to sustainable performance, and various sustainable development bonds. For details on products and services, please refer to 4-2 Green finance.



5-8 Incentive system

To strengthen and enhance the efficiency and effectiveness of climate change-related transition plans, everyone from top-level directors to frontline staff and financial advisors is actively involved in achieving climate commitments and transition plans. Financial incentives are based on climate-related indicators and performance as assessment criteria, directly impacting the department or individual's performance scores and serving as one of the reference factors for bonuses.

Table 31: Results of the incentive system

Aspect	Incentive eligibility	Performance indicators	Incentive details	Alignment of incentive measures with the Bank's climate commitment and transition strategy
Climate Governance	Board of Directors/ President and Senior executives	Board approval of climate transition plans and achievement of climate-related goals	The Remuneration Committee and the Board of Directors annually evaluate the performance of the Board in accordance with the Bank's Regulations for Board Performance Evaluation, linking director remuneration to the assessment while encompassing climate-related elements. The "Sustainable Development Best Practice Principles " stipulates that performance assessment for senior executives be aligned with sustainable development policies. Climate risk management and other related initiatives have been incorporated into department performance assessment and are positively correlated with annual performance bonuses.	By integrating the remuneration of directors and senior executives with their performance in sustainable management, we enhance internal control and policy efficiency of climate transition plans.
Operational carbon reduction	Executive officers and other senior managers	Progress and achievement of climate-related targets, reduction of absolute emissions, improvement of energy efficiency, and decrease in total energy consumption.	Indicators includes obtaining national and international sustainability or climate change-related certifications, the number of installed solar power facilities, and the reduction rate of environmental sustainability indicators compared to the base year. These serve as reference for the internal incentive system and are part of the performance assessment score of the General Affairs Division.	We annually review the performance of environmental sustainability and climate change governance, assess the effectiveness of various indicators, and consider national and international trends in climate change or greenhouse gas emission management. We iteratively adjust indicators to improve climate results.
Promotion of green financial products and services.	All Employees	Climate transition plan key performance indicator (KPI) results.	<p>We launched initiatives to drive branches to actively engage in green credit.</p> <p>Sustainable finance is a part of the performance assessment of overseas branches. Loans or bond investments that meet the criteria are assigned different assessment scores based on the amount.</p> <p>Sales representatives are encouraged to assist clients in using mobile insurance with higher assessment scores.</p>	This expands the scope of sustainable finance and green lending, such as loans for solar power equipment and green enterprise loans. It also encourages an increase in the amount and percentage of green finance investments to support companies in their low-carbon transitions. We aim to increase mobile insurance to reduce paper usage as a part of our active paperless policy.

06

Future outlook










To align our business development strategy with the targets of the Paris Agreement for net-zero emissions by 2050, the Bank is committed to the Science Based Targets initiative (SBTi) by signing in 2022. We are actively pursuing a low-carbon transition and have set short-, medium-, and long-term targets. Climate change is integrated into our daily operations and long-term strategy, demonstrating our management performance in addressing climate change and steering towards a low-carbon economy.

Given the ever-evolving international climate change regulations, domestic competent authorities have established disclosure and calculation regulations for climate-related financial disclosures and climate scenario analysis. In line with these developments, the Bank is committed to staying updated on climate-related data collection, model development, and climate change management. We collaborate with external organizations and conduct routine or ad hoc training, including TCFD task force meetings, to enhance the understanding of climate change impacts and regulatory requirements among our staff at all levels. When formulating policies, we strive to strike a balance between costs and benefits with our stakeholders.

The Bank has set carbon reduction targets for Category 1 and Category 2. We have set investment and financing limits on carbon-intensive industries. Going forward, we will develop a low-carbon transition strategy and submit and set carbon reduction targets for our investment and financing portfolio in accordance with SBTi guidelines to seek international recognition.

TCFD Core Element Comparison Table

Aspect	General guidelines	Corresponding Chapter
 Governance	Describes the Board's oversight of climate-related risks and opportunities.	1-2 Climate governance framework
	Describes the management's role in assessing and managing climate-related risks and opportunities	1-2 Climate governance framework
 Strategy	Describes the short-, mid-, and long-term climate related risks and opportunities identified by the organization	3-2 Climate risk identification results 4-1 Identified climate opportunities
	Describes the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	3-2 Climate risk identification results 4-1 Identified climate opportunities
	Describes the organization's strategic resilience, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	2-3 Assessing the strategic resilience with scenario analysis
 Risk Management	Describes the organization's processes for identifying and assessing climate-related risks.	2-2 Climate issue identification and assessment process
	Describes the organization's processes for managing climate-related risks.	3-3 Investment and financing risk management 3-4 Operational risk management
	Describes how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	3-1 Incorporating climate risks into the standard risk assessment framework
 Metrics and targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	5. Climate metrics and targets
	Disclose Category 1 and 2, and greenhouse gas (GHG) emissions of investment and financing portfolios, if appropriate, along with the related risks.	3-3 Investment and financing risk management 5-1 Greenhouse gas emissions data 5-4 Financial carbon emissions data
	Describe the targets employed by the organization in managing climate-related risks and opportunities, as well as the performance in implementing those objectives.	5. Climate metrics and targets

Aspect	Supplemental Guidance for the Financial Sector	Corresponding Chapter
 Strategy	Describes significant concentrations of credit exposure to carbon-related assets	5-5 Carbon-related assets
 Risk Management	Considers the interconnectedness between disclosing climate-related risks and traditional banking risks such as credit risk, market risk, liquidity risk, and operational risk.	3-1 Incorporating climate risks into the standard risk assessment framework 3-2 Climate risk identification results
 Metrics and targets	Provide metrics for assessing the impact of short-, medium-, and long-term climate-related risks (transition and physical risks) on its financing and other financial intermediation activities.	5-6 Limits and overview of the investment and financing in carbon-intensive and green industries 5-7 Green financial products and services
	Disclose greenhouse gas emissions from financing and other financial intermediary business activities	5-4 Financial carbon emissions data

TCFD Conformity Statement

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Conformity Statement

Climate related Financial Disclosure

This is to conform that Chang Hwa Commercial Bank Ltd. 彰化商業銀行股份有限公司
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Holds Statement Number <CFD 786703>

As a result of carrying out conformity check process based on TCFD requirement, BSI declares that:

- Chang Hwa Commercial Bank Ltd. follows Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to disclose climate-related financial information which is clear, comparable and consistent about the risks and opportunities and its financial impact. The disclosures cover four core elements and have been prepared by seven principles for effective disclosures.
- The maturity model for the Climate-related Financial Disclosures is **Level-5+: Excellence** grade.

For and on behalf of BSI

Managing Director BSI Taiwan, Peter Pu

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Appendix

Climate-Related Financial Disclosures TCFD Report



彰化銀行