

Contribution for Mitigation and Adaption to Climate Change

The AFF industries are the foundation of the Norinchukin Bank. These industries are prone to incur the negative impact of climate change and, at the same time, have the potential to amplify climate change.

Our response to climate change contributes to the development of the AFF industries, which is the mission of the Norinchukin Bank. We pursue efforts to mitigate and adapt to climate change through our business activities, focusing on climate-related opportunities and risk management. As part of our efforts, the Bank expressed our support in 2019 for the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), established by the Financial Stability Board (FSB). We are addressing the impact and risks of climate change on our business in an appropriate manner, engaging in initiatives, and enhancing our disclosures based on the TCFD recommendations. In FY2020, we conducted sector-specific qualitative assessments of climate-related risks and quantitative assessments using scenario analyses of the transition risks from climate change for the electric utilities, oil-gas-coal, food and agriculture, and beverages sectors.

Governance for Addressing Climate Change

The Norinchukin Bank holds regular meetings of our Sustainability Committee (under the board of directors) to discuss policies addressing environmental and social issues, including climate change, and the status of our initiatives. The outcomes of the Sustainability Committee meetings are reported to the board of directors and the Supervisory Committee as needed. In FY2020, we reported on how we plan to extend our Environmental Policy (Core Principles toward solving environmental issues) to group companies, as well as how we manage environmental and social risks, including matured operation of our Investment and Financing Sector Policy. Our reporting also referenced the status of project financing aligned with the Equator Principles.

Climate-related Opportunities

Climate change is a future risk. At the same time, we can find business opportunities in mitigating and adapting to this climate risk. One example is the potential for shifting electricity to renewable energy. The shift from conventional thermal power to offshore wind and solar power generation will lead to corporate capital investment and lending and investment opportunities for the Bank. This is one way in which we can support the transition to a decarbonized society through financing services.

Initiatives through sustainable financing

We support the initiatives of our investment and finance clients for climate change issues through sustainable financing.

- Project finance for overseas offshore wind power projects → P43
- Sustainability-linked loans to promote environmentally friendly buildings → P27

Initiatives for ensuring the sustainability of forests and the forestry industry

We are engaged in various initiatives to sustain and revitalize the forest function to absorb carbon dioxide. → P38



Solar sharing initiative

We contribute to local community revitalization through solar sharing (agricultural photovoltaic power generation) and the use of idle land by partnering with renewable energy power generation equipment manufacturers and distributors. → P28



Impact Analysis of Climate-Related Risk

Climate-related risks commonly comprise two main risk drivers: transition risk and physical risk. Transition risk refers to the risk that occurs in transitioning to a society with low greenhouse gas emissions (a low-carbon society). For example, the introduction of a carbon tax levied on greenhouse gas emissions could lead to a negative financial impact on investment and financing clients that have high emissions. This

in turn could result in credit costs for financial institutions. We have conducted an analysis of this risk, providing disclosure of the details of our analysis. Physical risk refers to the risk of increased damage due to disasters stemming from climate change (floods, etc.). The Bank is founded in the AFF industries. Accordingly, we understand the importance of physical risk, and we have initiated analyses on physical risk in addition to transition risk.

Risks posed to the Bank by climate change

Risk	Classification	Major Risks	Time Frame
Transition risk	Policy and Legal Risk Technology Risk Market Risk	<ul style="list-style-type: none"> • Increase in credit costs due to the impact of regulatory measures aimed at achieving the 2°C target in the business models and performance of investment and financing clients • Increase in credit costs due to changes in the supply-demand relationship for products and services, as well as changes in corporate performance, as the market becomes more decarbonization-oriented 	Medium- to long-term
	Policy	• Changes in regulations in response to growing international concern regarding climate change	Short-term
	Reputation Risk	• Risk of inadequate climate change efforts and information disclosure	Short-term
Physical risk	Acute Risk Chronic Risk	<ul style="list-style-type: none"> • Downturn resulting from stagnating investment and financing client businesses due to natural disasters such as typhoons and torrential rains, as well as increasing credit costs resulting from damage to collateral value of real estate and other assets • Risk that climate change will affect land use, productivity of primary sector of the economy, etc. • Impact on business continuity due to damage to the Bank's assets caused by extreme weather 	Short-, Medium-, and Long-Term

Climate-Related Risk Assessment by Sector

The impact of climate change will become even more apparent over the medium- to long-term, and said impact will vary depending on the sector in which our investment and financing clients operate.

Therefore, we evaluated where and when transition and physical risks would occur, targeting sectors and other areas defined by the TCFD recommendations. The manifestation of risks associated with climate change is caused by various external factors, environments, and transmission channels. We created the heatmap below after identifying these risks and factors. The heatmap shows (in chronological order) the impact of these risks on the sectors in which the Bank has most financial exposure. Our analysis also reflects the effects of climate change affect at different times according to region, geographic conditions, and jurisdictions. As one example, transition risks in the EU are expected to manifest early due to environmental regulations being adopted ahead of the rest of the world.

Assessment of transition risks *1



*1 Transition risks are assessed based on a 2°C scenario in which policy measures mitigate climate change, while physical risks are assessed based on a 4°C scenario in which global warming advances.

Sector	2030			2040			2050		
	Japan	EU	US	Japan	EU	US	Japan	EU	US
Electric utilities	Low	High	High	Low	High	High	High	High	High
Oil-gas-coal	Low	Low	Low	Low	Low	Low	High	High	High
Chemical	Low	Low	Low	Low	Low	Low	High	High	Low
Metal and mining	Low	Low	Low	Low	Low	Low	High	High	Low
Food and agriculture	Low	Low	Low	Low	Low	Low	Low	Low	Low
Beverages	Low	Low	Low	Low	Low	Low	Low	Low	Low
Railroad	Low	Low	Low	Low	Low	Low	Low	Low	Low
Land transport	Low	Low	Low	Low	Low	Low	Low	Low	Low
Marine transport	Low	Low	Low	Low	Low	Low	Low	Low	Low

Physical risk assessment *1

Sector	2030			2040			2050		
	Japan	EU	US	Japan	EU	US	Japan	EU	US
Chemical	Low	Low	Low	High	Low	Low	High	Low	Low
Real estate management and development	Low	Low	Low	High	Low	Low	High	Low	Low
Real estate-related finance	Low	Low	Low	High	Low	Low	High	Low	Low
Insurance	Low	Low	Low	High	Low	Low	High	Low	Low
Paper and forest products	Low	Low	Low	Low	Low	Low	Low	Low	Low
Food and agriculture	Low	Low	Low	Low	Low	Low	Low	Low	Low
Beverages	Low	Low	Low	Low	Low	Low	Low	Low	Low
Metal and mining	Low	Low	Low	Low	Low	Low	Low	Low	Low
Electricity	Low	Low	Low	Low	Low	Low	Low	Low	Low
Oil-gas-coal	Low	Low	Low	Low	Low	Low	Low	Low	Low
Railroad	Low	Low	Low	Low	Low	Low	Low	Low	Low

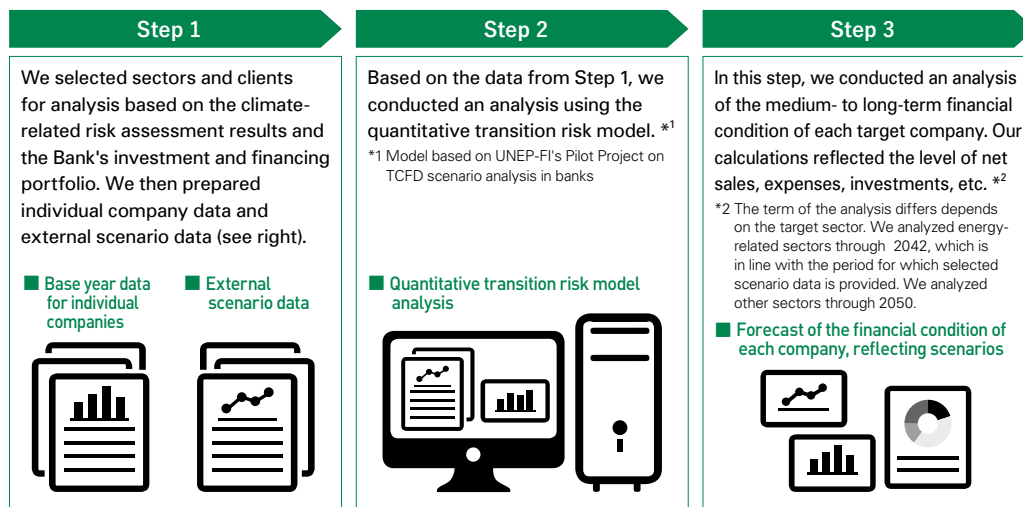
Impact Analysis of Climate-Related Risk (Scenario Analysis)

We conduct scenario analyses to understand the impact of climate-related risks on our credit portfolio and finances. Our target sectors for transition risk analysis consist of the electric utilities and oil-gas-coal sectors. Our evaluations on the left side of the chart indicate these sectors as having high climate-related risks, as do the food and agriculture and beverages sectors, which form the food and agricultural value chains. Through scenario analysis for these sectors, we evaluated the medium- to long-term changes in credit costs caused by the progress of decarbonization.

We used the scenarios published by the representative International Energy Agency (IEA) and the Food and Agriculture Organization of the United Nations (FAO). Our analysis was based on the method published by the pilot project led by the United Nations Environment Program Finance Initiative (UNEP FI) with the objective of discussing and developing methods for climate-related financial information disclosure in the banking industry.

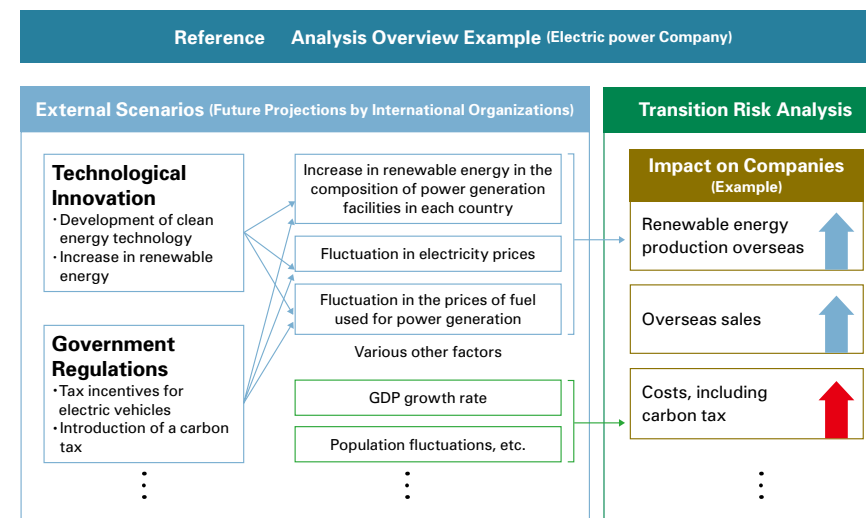
Special Feature: Transition Scenario Analysis

Transition Scenario Analysis Overview



Methodology for Transition Risk Scenario Analysis

- Based on the results of our qualitative assessment of climate-related risks, we selected the electric utilities, the oil-gas-coal, food and agriculture, and beverage sectors as targets for transition risk scenario analysis. The electric utilities and oil-gas-coal sectors have been identified in the final TCFD report and Sustainability Accounting Standards Board (SASB) as sectors with high carbon emissions and that are highly vulnerable to transition risks. Hence we believe our selection of companies for scenario analysis was compliance with these international initiatives and global standards. We selected the food and agriculture and beverages sectors based on the results of our climate change qualitative assessment, as well as the fact that these two sectors form the foundation of the Bank. Given our investment and financing portfolio, the analysis covers not only domestic and overseas lending clients, but also our investment clients in corporate bonds.
- Our analysis of the electric utilities and oil-gas-coal sectors incorporates various forecast data from the IEA World Energy Outlook, which is widely used internationally including Japan. The future scenarios we referenced include the Sustainable Development Scenario (SDS = 2°C scenario), which incorporates measures consistent with achieving the 2°C target of the Paris Agreement, and the Stated Policy Scenario (STEPS = 4°C scenario), which incorporates currently announced policies and targets. We predicted the impact on Bank investments and loans, while also analyzing the increase or decrease in credit costs. We formed our predictions by combining the Dynamic approach, in which companies make new capital investments in response to climate change, and the Static approach, in which companies do not make additional capital investments in response to climate change.
- For the food and agriculture and beverage sectors, we used FAO forecast data and future scenarios: towards sustainability scenario (TSS = 2°C scenario in which changes are made proactively to establish sustainable food and agriculture systems), and business as usual scenario (BAU = 4°C scenario in which past trends and policy directions are maintained). Using the same approach as with the electric utilities and oil-gas-coal sectors, we examined the impact on the Bank's credit portfolio, including the impact on our investment and financing clients.



Analysis Target	Selection Scenario
Energy (electric utilities, oil-gas-coal)	IEA World Energy Outlook 2019 – SDS, STEPS •SDS stands for Sustainable Development Scenario, and corresponds to the 2°C scenario •STEPS stands for Stated Policies Scenario, and corresponds to the 4°C scenario
Food and agriculture, beverages	FAO Food and agriculture projections to 2050 – TSS, BAU •TSS stands for Towards Sustainability, and corresponds to the 2°C scenario •BAU stands for Business as Usual, and corresponds to the 4°C scenario

Four-Way Scenario Analysis

	Dynamic Approach <small>(an approach reflecting new capital investments in response to market demand)</small>	Static Approach <small>(an approach reflecting the status quo without additional capital investment)</small>
4°C Scenario <small>(a scenario reflecting only established policies that have already been formulated)</small>	4°C Scenario x Dynamic	4°C Scenario x Static
2°C Scenario <small>(a scenario reflecting measures necessary to achieve the 2°C target of the Paris Agreement)</small>	2°C Scenario x Dynamic	2°C Scenario x Static

Special Feature: Transition Scenario Analysis

Transition Risk Scenario Analysis Results

● Electric utilities and Oil-Gas-Coal Sectors

The Static approach increased credit costs by approximately 4 billion yen per fiscal year, while the Dynamic approach did not incur any additional credit costs. Looking at the trends for each of our investment and finance clients, we identified the financial impact stemming from stranded assets in power generation facilities due to the spread of renewable energy and the cost of carbon tax. These trends were notable for power companies in particular, which reflect the high ratio of thermal power generation. On the other hand, electric power companies expanding their business in Asia and other regions are capturing climate change as an opportunity. These entities are trending toward increased profits through capital investment in renewable energy and low-carbon technologies.

● Food and Agriculture, and Beverages Sectors

In both the Dynamic and Static approaches, the credit cost increased by approximately 1 billion yen per fiscal year. Looking at the medium- to long-term changes in our investment and financing clients based on the scenarios, we recognized the negative impact of a changing market in Japan and other countries. This market change included a decrease in meat consumption due to changes in dietary habits, stemming from a growing consumer sentiment of sustainability. In contrast, companies with operations overseas in Asia and other regions showed a positive trend. Increased demand due to population growth and economic growth supported earnings.

● Impact on Credit Portfolio

The total impact of transition risk in the two aforementioned sectors could result in increases of the credit cost by approximately 1 billion yen to 5 billion yen per fiscal year through 2042 (the range is due to the difference between the Dynamic and Static approaches). Thus, the impact on our credit portfolio is deemed to be limited.

Using Analysis Results

- Based on the results of the transition risk analysis, we initiated engagement (constructive dialogue) on climate-related issues with our investment and financing clients in sectors where we identified a relatively large impact. By sharing an awareness of the issues with our investment and financing clients, we will strengthen our efforts to address climate change together and work toward creating a low-carbon and decarbonized society.
- As the transition to a low-carbon society progresses, the Bank will continue to support the efforts of our investment and financing clients to increase their resilience to climate change. Our support will include promoting ESG loans.

Detailed Results of Transition Risk Scenario Analysis for the Food, Agriculture, and Beverage Sectors

(1) Overview of the Assumed FAO Scenario

4°C Scenario	2°C Scenario
<ul style="list-style-type: none"> ● A scenario assuming that only fixed policies currently in effect will be implemented ● Despite the efforts of many countries, food and agriculture issues remain unresolved. 	<ul style="list-style-type: none"> ● A scenario in which universal and sustainable access to safe and nutritious food is achieved in a way that is sustainable for the environment. ● A state in which proactive change is implemented toward a more sustainable food and agricultural system.

(2) Analysis Results by Region, Scenario, and Approach

Region	Dynamic		Static
	4°C Scenario	2°C Scenario	4°C / Common to both 4°C and 2°C Scenarios
High-income countries (including Japan)	<ul style="list-style-type: none"> · Likely increase of corporate earnings due to robust economic growth. · Maintenance of existing food culture 	<ul style="list-style-type: none"> · Decreasing demand for animal-based foods due to a greater awareness of sustainability; increasing demand for vegetable and fruit-based foods 	<ul style="list-style-type: none"> · Limited increase in earnings as production volume remains unchanged due to lack of capital investment to meet increased demand
Low- and middle-income countries	<ul style="list-style-type: none"> · Continued increase in demand for grains and other products due to population growth 	<ul style="list-style-type: none"> · Higher economic growth compared to the 4°C scenario, and increased demand for animal products due to more diverse diets in line with higher income levels 	

(3) Post-Analysis Considerations

In both the 4°C and 2°C scenarios, the demand for food on a global level will increase due to global population growth and other factors. This demand will lead to increased production and increased profits. In the 2°C scenario, significant economic growth is expected in low- and middle-income countries experiencing large population growth. Demand for food grows more than under the 4°C scenario. Therefore, companies with global operations increase their profits under both scenarios, while the results for companies operating in specific regions vary depending on the characteristics of those regions. Companies that produce mainly in Japan, where the population is expected to decline, have already been impacted by a decrease in animal product consumption and an increase in vegetable and fruit plant product consumption stemming from greater consumer sentiment of sustainability.

Our scenario analysis also confirmed that, in addition to regional characteristics, the products handled and business structure (e.g., upstream versus downstream) are influential factors. We will continue to work on expanding the number of sectors we analyze and refining our analysis methodology.

Addressing Physical Risk Scenario Analysis

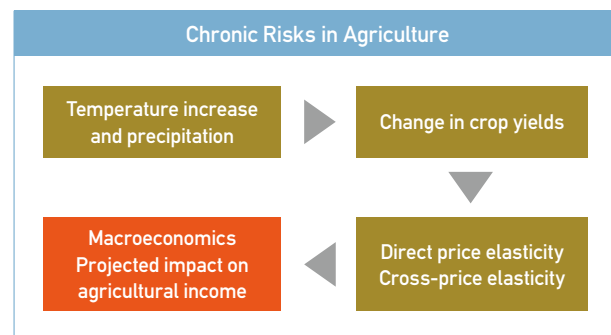
We began physical risk scenario analysis of physical risks in Japan, which we determined to be a high-risk region based on sector risk assessments associated with climate change, as discussed above.

Here, our first step was to analyze flood damage, which has been significant in recent years in Japan. We then estimated the potential maximum amount of damage based on hazard maps, the location of the company, and other factors. Based on this analysis, we estimated the resulting credit cost. We are also taking on the challenge of analyzing the impact on the agricultural sector, which is important to the Bank, as we are founded on the AFF industries.

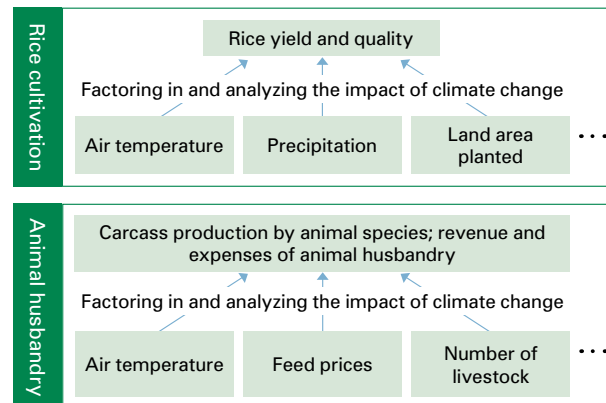
There are two types of physical risks, defined as acute risks and chronic risks*1. We will develop an analytical approach that considers chronic risks that have more serious consequences for agriculture, while we will also conduct a multifaceted study of specific applications leveraging our analytical results.

We intend to disclose our results to the public some time on and after FY2022.

*1 Acute risk refers to a risk arising directly from an event such as a natural disaster. Chronic risk refers to a risk of an ongoing problem caused by long-term changes, such as changes in rainfall or temperature.



Conceptual Approach



Managing Climate-Related Risks

We adopted and implemented an environmental and social risk management (ESRM) framework centered on investment and financing sector policy. This framework helps us manage environmental and social risks, including climate change, in investment and financing.

In 2019, we established the Environmental Policy and Human Rights Policy as a basic policy to solve environmental and social issues.

In addition, as part of our investment and financing sector policy, we established environmental and social policies for investment and financing in sectors causing concern about negative environmental and social impacts. These sectors include coal-fired thermal power use, coal mining, palm oil extraction, and impact on forests.

We conduct due diligence on large-scale development projects based on the Equator Principles.

→ Initiatives to Manage Environmental and Social Risks P29

Metrics and targets

- Reducing CO₂ Emissions Through Business Activities
We are engaged in understanding greenhouse gas emissions, striving to reduce the environmental burden through our business activities. In FY2019, we deactivated certain backup system terminals in connection with system migration. This is the main reason for the reduction in electricity consumption (decrease in Scope 2) compared to the previous year. We will continue to engage in energy and resource saving efforts.

(Units: tCO₂)

Item Measured		FY2018	FY2019
Scope1	Direct emissions	2,063	2,045
Scope2	Indirect emissions	25,247	20,104
Scope3	Other indirect emissions		
	3 Fuel- and Energy-related activities	934	839
	6 Business travel	455	455
Total		28,699	23,443

(Note) Applies to domestic head and branch offices.

- Setting the Medium/Long-Term Goals FY2030
We have set the Medium/Long-Term Goals FY2030 to reduce GHG emissions by 50% (compared to 2013 levels) from the Norinchukin Bank's investment and finance clients. As part of this process, we investigate the measurements described under Scope 3 Category 15 (investment).

→ Medium/Long-Term Goals P10

Carbon-related assets (as of end of March 2021) *2

Sector	Total share of portfolio
Energy	1.9%
Utilities	2.4%
Total	4.3%

Financed amount: 21.8 trillion yen (as of end of March 2021)

*2 Financed assets excluding the financed assets for renewable power generation, etc. from the financed assets that belong to the energy and utilities sectors based on the TCFD recommendations are defined as carbon-related assets.