Information Disclosure in line with TCFD Recommendations

Nissan Chemical announced our support for recommendations of Task Force on Climate-related Financial Disclosures (TCFD) in August 2020. We will strive to increase our corporate value by not only continuing to promote our initiatives to address climate change such as measures for reducing GHG emissions but also improving our information disclosure step-by-step.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Governance

Our initiatives to address climate change are considered and deliberated by the Sustainability Promotion Committee, the Climate Change Committee, the Risk Management & Compliance Committee, and the Environment & Safety Committee. The Board of Directors then supervise these initiatives by discussing and resolving the content of deliberation at each committee.

As we have identified "mitigation of climate change" as one of our materiality factors, we newly established the Climate Change Committee in June 2022 where issues focused on climate change are specifically discussed and examined.

Sustainability Promotion Committee (twice per year)

This Committee considers and deliberates on material issues in order to more strategically tackle global social issues, including climate change. The committee is chaired by the officer responsible for the Sustainability Promotion & IR Department (Director, Senior Managing Executive Officer). Policies, targets, and plans, etc. related to sustainability, including climate change, are deliberated, and after approval at the management meeting, the following matters are submitted to the Board of Directors.

Resolving matters at the Board of Directors:
- Policy planning related to sustainability
- Long- and mid-term plans and annual plan for sustainability

Climate Change Committee (more than once per year)

This Committee was established to accurately grasp the risks and opportunities that the Company faces due to the increasingly serious climate change problem, and connect them more strongly with our management strategies to strengthen our comprehensive climate change measures. The committee is chaired by the president (COO).

Analysis of risks and opportunities related to climate change, as well as policies, targets, plans, etc., are deliberated, and after approval at the management meeting, the following matters are submitted to the Board of Directors.

Resolving matters at the Board of Directors:
- Scenario analysis and countermeasures for identified risks and opportunities
- Long- and mid-term plans and annual plan focused on measures against climate change

◎ Related Information: Sustainability Promotion Structure P67

Risk Management & Compliance Committee (twice per year)

This committee was established to enhance the effectiveness of risk management, and to maintain and promote compliance. The committee is chaired by the Chief Risk Management Officer (CRO/ Director, Managing Executive Officer) appointed by the Board of Directors.

The Risk & Compliance Managers (heads of divisions/departments and plants/laboratories, presidents of domestic consolidated subsidiaries) who are members of this committee, periodically identify, assess, and formulate countermeasure plans for risks including climate change-related risks, conduct self-assessments for the issues and status of implementation of the risk countermeasure plan, and formulate improvement plan. In addition to this, they regularly provide education and training at each division/department, plant/laboratory and domestic consolidated subsidiary.

The above risk management activities and activity plans for the next fiscal year are deliberated, and their appropriateness is validated and reviewed at least once a year at the management meeting. After approval at the management meeting, the following matters will be submitted to the Board of Directors.

Resolving matters at the Board of Directors:
- Identification of group major risks and their countermeasures
- Mid-term plan and annual plan for risk and compliance

Environment & Safety Committee (more than once per year)

This committee oversees and promotes responsible care (RC) activities within Nissan Chemical and affiliated companies. The committee is chaired by the officer responsible for the Environment, Safety & Quality Assurance Department (Director, Senior Managing Executive Officer).

At this Committee, while sharing information with the Sustainability Promotion Committee, long- and mid-term plans including the response to climate change, annual activities in each plant/laboratory, summary of company-wide activities, and the targets, goals, and action plans for RC in the next fiscal year, etc. are deliberated.

The contents of deliberations are validated and reviewed at least once a year at the management meeting. After approval at the management meeting, the following matters are submitted to the Board of Directors.

Resolving matters at the Board of Directors:
- Policy planning related to RC
- Long- and mid-term plans and annual plan for RC

Risk Management

In the framework of the Risk Compliance Committee, we clarify risks including climate-change related risk taking into account the business characteristics of each division and the surrounding businesses, including global political, economic and social conditions. For each risk identified, a risk assessment is conducted from the viewpoint of probability and impact on business, and a risk map is subsequently created based on the results of the risk assessment to identify the Group Major Risks. The Group Major Risks are deliberated at the Risk Management & Compliance Committee, approved at the management meeting, and then resolved by the Board of Directors.

Management Process of Group Major Risks

The department in charge and the risk owner are decided for each selected Group Major Risk, the Group Major Risks countermeasure plan is formulated mainly by the Risk & Compliance Manager of the department in charge, and after deliberation at the Risk Management & Compliance Committee, countermeasure plan is resolved at the Board of Directors. Implementation status of countermeasures are deliberated at the Risk Management & Compliance Committee, and the results of the deliberation are reported to the Board of Directors.

Regarding typhoon and torrential rain, which are one of the Group Major Risks, we set the KPI of "Update and maintain BCPs (business continuity plans) for products that account for 50% of ordinary income by FY2027" at each plant as a response to the risk of increasing equipment restoration costs and reducing production at major plants. As of the end of FY2022, we completed updating and maintaining our BCPs for products that account for 41% of ordinary income.

Identification of risks and assessment of the impact on the business and the probability are conducted on a regular basis to periodically review the Group Major Risks.

Please see the following web page for process for identifying Group Major Risks, risk map, Group Major risks, and countermeasures against risks.
https://www.nissanchem.co.jp/eng/csr_info/risk_management/policy.html

Strategy

The TCFD recommendations require a scenario analysis* to understand how the risks and opportunities caused by climate change impact a company's finances.

In 2020, reffering both 2° C scenarios in which transition to decarbonized society realizes (mainly transition risk and opportunity) and 4° C scenarios in which climate change progresses (mainly physical risk and opportunity), we identified business risk and opportunity, examined their importance, and summarized impact on the Company and our strategies. However, in response to the agreement that was reached to pursue efforts to limit the increase in average temperature to 1.5° C at the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26) held in 2021, we revised our scenario analysis in July 2023.

*Scenario analysis is a method for anticipating the effects of global warming and climate change and changes in the business environment caused by long-term policy trends related to climate change, and for examining the impact that such changes may have on the company's business and management.

Referenced Scenarios

1.5°C Scenario*1	● IEA-WEO*3, ETP*4, Net Zero Scenario (NZE) ● IPCC SSP*5 1-1.9、1-2.6
4°C Scenario*2	● IEA-WEO Stated Policies Scenario (STEPS) ● IPCC SSP5-8.5

*1 Scenarios when necessary measures will be implemented to keep global average temperature rise below 1.5°C compared to pre-industrial levels
*2 Scenarios in which the global average temperature will rise by 4°C at the end of the 21st century compared to pre-industrial levels
*3 International Energy Agency "World Energy Outlook" (2022)
*4 International Energy Agency "Energy Technology Perspectives" (2023)
*5 The UN Intergovernmental Panel on Climate Change (IPCC) "Shared Socio-economic Pathways"

Scope of analysis: Chemicals, Performance Materials, Agricultural Chemicals, Healthcare, Planning and Development Divisions

Analysis period: 2030 and 2050

Process of Risks and Opportunities Identification

Step1 ● Clarify the value chain and stakeholders, and sort out the factors that affect our business

Step2 ● Identify risks and opportunities based on the above scenarios and other external data

Step3 ● Identify particularly important risks and opportunities from those of Step2, considering the probability and the impact on our business (human loss, financial impact, etc.)

Scenario Analysis Results (climate change risks/opportunities)

As a result of scenario analysis and quantifying the financial impact using the 1.5° C scenario, we identified important risks, such as increased operating costs with the introduction of carbon pricing and decreased sales from an inability to provide low-carbon products. In response to the introduction of carbon pricing and decrease in demand for products with high life-cycle carbon emissions, we will work to reduce the risks by not only further promoting the use of renewable energy and conversion of fuel and feedstock at our plants, something which we have been working on thus far, but also by further promoting decarbonization investments that take into account reducing GHG emissions through the use of internal carbon pricing.

And in response to market changes due to increasing demand for environmental considerations, we assume that demand for environmentally friendly biological agrochemicals and low-carbon products, such as materials for secondary battery, will increase. In terms of biological agrochemicals, we established the Biological Group within Agricultural Chemicals Research & Development Department, Biological Research Laboratories in April 2022 and conduct R&D toward commercialization.

Additionally, in the Environment & Energy field, we aim to commercialize the secondary battery materials, the energy harvesting materials, and CCS/CCUS materials, by accelerating the development of them.

Meanwhile, regarding the risk of flood damage, which we recognize as a risk in the 4°C scenario, we have identified the possibility of flooding at our major production and distribution bases as a material risk. To address this risk, we will continue to formulate and revise the BCPs for our plants and major products from time to time, raise the floors and foundations of our plant equipment, secure product inventory, and purchase multiple sourcing of key raw materials.

And in response to market changes owing to rising temperatures and abnormal weather, we assume that demand for agricultural chemicals and disinfectants for drinking water will increase due to the increase in pests and weeds, as well as water shortages and spread of infectious diseases. Based on the prospect of market growth, we aim to expand our opportunities. Furthermore, by building a business portfolio that is less susceptible to the effects of climate change, we will increase the resilience of our business activities and strive to minimize risks and maximize opportunities.

Risks/Opportunities and Countermeasures identified in the 1.5°C Scenario

All: All businesses and Planning and Development Division
Agri: Agricultural Chemicals Business
Chem: Chemicals Business

Scenario	Factors	Impact on Business		Relevant Business	Measures
1.5°C Scenario	● Regulations on GHG emissions	Risk	● Increase in raw material procurement costs due to introduction of carbon pricing such as carbon taxes, and compliance with regulations and decarbonization investment, by suppliers	All	● Pass on the price to the product ● Multiple sourcing of key raw materials
			● Increase in operating costs due to introduction of carbon pricing such as carbon taxes, and compliance with regulations and decarbonization investments		● Fuel and feedstock conversion at plants ● Update to energy-saving equipment, etc. ● Further use of renewable energy ● Zero N_2O emissions from nitric acid production capacity (planned investment: 500 million yen) ● Optimization of manufacturing processes ● Promotion of decarbonization investment with the introduction of internal carbon pricing
		Opportunity	● Avoidance of carbon pricing impact by reducing GHG emissions		
	● Changes in energy policy ● Changes in energy demand and supply	Risk	● Increase in our raw material procurement costs due to renewable energy procurement at suppliers	All	● Pass on the price to the product ● Multiple sourcing of key raw materials
			● Increase in operating costs due to in-house renewable energy procurement		● Update to energy-saving equipment, etc. ● Optimization of manufacturing processes
			● Increase in logistics costs		● Optimization of logistics routes, systems, etc.
		Opportunity	● Reduction of operating costs from high energy effciency and energy saving ● Acquisition of funding opportunities (grants and subsidies, etc.)		● Update to energy-saving equipment, etc. ● Optimization of manufacturing processes ● Advanced GHG emission reduction efforts and appropriate information disclosure
	● Market changes due to increasing demand for environmental consideration	Risk	● Decrease in sales of agricultural chemicals business due to introduction of regulations on the use of agrochemicals	Agri	● Development of environmentally friendly agrochemicals ● Development of biological agrochemicals ● Acquisition of biostimulant technology ● Increase in the number of registered countries
			● Decrease in sales due to inability to provide low-carbon products ● Decrease in demand from customers due to retention of products and businesses with large GHG emissions	All	● Expand sales of low-carbon products ● Development of environmentally friendly products and services ● Establishment of innovative manufacturing technologies ● Review of business portfolio ● Promotion of decarbonization investment with the introduction of internal carbon pricing ● Further use of renewable energy ● Fuel and feedstock conversion at plants
		Opportunity	● Increase in demand and sales of parts and materials for low-carbon products		
			● Increase in demand for biological agrochemicals, etc.	Agri	● Development of environmentally friendly agrochemicals ● Development of biological agrochemicals ● Acquisition of biostimulant technology
	● Increased demand from investors and others for addressing climate change	Risk	● Damages of ESG evaluation and reputation, decrease in market capitalization, and difficulty in raising funds due to delay in measures to address climate change, such as heavy use of fossil fuels	All	● Efforts to further reduce GHG emissions and appropriate information disclosure
		Opportunity	● Improvement of ESG evaluation and reputation, and increase in market capitalization through advanced initiatives and information disclosure		

Risks/Opportunities and Countermeasures identified in the 4°C Scenario

4°C Scenario	Rising temperatures and increase in abnormal weather	Risk	● Increase in risk of impacts on plant operations, equipment, inventory, and supply chains due to flooding caused by heavy rains, floods, and sea level rises, etc.	All	● Formulation of BCP for major products at each plant ● Implementation of higher foundations and floors according to risk
			● Reduction of production capacity (such as insufficient cooling capacity, etc.) and increase in product and material management costs, due to water shortages caused by droughts and heat waves	All	● Formulation of BCP for major products at each plant ● Optimization of existing cooling systems ● Water conservation and introduction of water recycling equipment ● Introduction of energy-saving air conditioning and cooling equipment
	Market changes caused by rising temperature and abnormal weather	Risk	● Reduction of planted area due to increase in frequency and enhanced intensity of heavy rain / flooding, and to difficulties in securing irrigation water ● Changes in crop distribution and reduction of planted area due to temperature rises	Agri	● Increase in the number of registered countries ● Enhancement of the agrochemical portfolio
		Opportunity	● Increase in sales of existing agrochemicals and increase in opportunities to develop new agrochemicals due to the increase in pests, weeds, and pathogenic bacteria and higher resistance	Agri	● Development of new agrochemicals ● Enhancement of the agrochemical portfolio ● Increase in the number of registered countries
			● Increase in sales of disinfectants due to less available water (freshwater) resources and higher global demand for drinking water, etc.	Chem	● Expansion of sales of disinfectants for drinking water

Financial impact

Scenario		Impact on Business	Calculation Method	Financial Impact (☆2027)
1.5°C Scenario	Risk	● Increase in operating costs due to introduction of carbon pricing such as carbon taxes, and compliance with regulations and decarbonization investments	Calculation of the increase in operating costs in 2030 due to the introduction of carbon pricing from estimated emissions and carbon price * Assuming the cases in which emissions reductions do not progress as compared to the base year (FY2018) results * Carbon price (2030): $140/t-$CO_2$ (Ref: IEA WEO2022 NZE)	5.9 billion yen/year
		● Increase in operating costs due to in-house renewable energy procurement	Calculation of the increase in operating costs for procuring renewable energy in 2030, where all electricity used is switched to renewable energy, based on the sales plan for 2027 * Estimated renewable energy power procurement unit prices taken from non-fossil certificate prices, etc.	0.46 billion yen/year
		● Decrease in sales of agricultural chemicals business due to introduction of regulations on the use of agrochemicals	Calculation of the sales decrease in 2030 due to regulations of Agrochemicals such as Farm to Fork and Green Food System Strategy	5.1 billion yen/year
		● Decrease in sales due to inability to provide low-carbon products	Calculation of the sales decrease in 2030 where decarbonization in the company's chemical manufacturing process does not progress, and sales volume of existing products with high product life cycle emissions (product carbon footprint) decreases * FY2021 actual figures used for sales of existing products * Forecasted decrease in sales volume of existing products is estimated by referring to IEA Net Zero by 2050, etc.	4.2 billion yen/year
	Opportunity	● Avoidance of carbon pricing impact by reducing GHG emissions	Calculation of the avoided increase in operating costs in 2030 due to the introduction of carbon pricing when the FY2027 GHG emissions reduction target (reducing by at least 30% from FY2018 level) is achieved * Carbon price (2030): $140/t-$CO_2$ (Ref: IEA WEO2022 NZE)	1.8 billion yen/year
		● Increase in demand and sales of parts and materials for low-carbon products	For low-carbon products that demand is expected to increase, calculation of sales increase from FY2021 based on formulated sales plan for FY2027	☆1.2 billion yen/year
4°C Scenario	Risk	● Increase in risk of impacts on plant operations, equipment, inventory, and supply chains due to flooding caused by heavy rains, floods, and sea level rises, etc.	Calculation of decreased sales and damage to equipment and inventory during the period when production sites, which have a particularly large impact, have ceased operations as the financial impact in the event that a site is flooded, based on 2030 and 2050 assumptions * Aqueduct floods used to analyze flood depth * Damage rate due to flooding is set with reference to Manual for Economic Evaluation of Flood Control Investment (Draft), etc. published by the Ministry of Land, Infrastructure, Transport and Tourism. * The amount of financial impact is calculated as the maximum risk where floods occur at a site with a large impact and no countermeasures taken, based on FY2021 site sales, equipment and inventory levels, etc.	2030: 7.6 billion yen 2050: 12.8 billion yen

Metrics and Targets

We have identified mitigation of climate change as one of our materiality factors, and believes that reducing emissions at the Company, which accounts for approximately 95% of Group-wide GHG (Scope 1 and 2) emissions, is crucial for mitigating its climate change-related risks. For this reason, we set long-term target of "achieving carbon neutrality by 2050" and mid-term target of "reducing GHG emissions by at least 30% from FY2018 level by FY2027", as target of reducing Nissan Chemical Corporation's GHG emissions (Scope1 + 2). These targets have positioned as non-financial targets in our long-term business plan Atelier2050, and mid-term business plan Vista2027, and the progress is managed. In addition, the degree of progress for these reduction targets is also reflected in the ESG-linked portion of executive officers' performance-related remuneration.

We are steadily reducing GHG emissions by converting fuel and feedstock to natural gas at the Toyama Plant, reducing the amount of dinitrogen monoxide (N_2O) emissions generated from the reactor through optimizing production capacity of nitric acid in FY2017, as well as energy saving by replacing aging facilities and improving the equipment capacities. In FY2021, GHG emissions increased from FY2020 due to increased production of ammonia-based products. Although, in FY2022, despite increased GHG emissions due to nitric acid plant trouble, etc., GHG emissions decreased from FY2021 as a result of melamine production shutdown, and boiler fuel conversion at the Onoda Plant.

The Company's GHG emissions and energy consumption have been subject to third-party verification since FY2018. Going forward, we will continue to consider reducing GHG emissions and strive to reduce our environmental impact as well as disclose highly reliable information.

Long- and Mid-term Targets

Category	Metrics		Scope	FY2027 Target	2050 Target
Reduction of GHG emissions	GHG emissions (Scope1+2)	Absolute emissions	Non-consolidated	Reducing by at least 30% from FY2018 level	Carbon Neutrality

Climate change-related data

	Scope	Unit	2018	2019	2020	2021	2022	FY2027 Target
Scope1	Non-consolidated	t-CO_2e	245,469	221,264	216,276	231,713	223,388	—
Scope2	Non-consolidated	t-CO_2e	117,926	105,390	102,182	113,623	104,275	—
Scope1+2	Non-consolidated	t-CO_2e	363,395	326,654	318,458	345,336	327,663	254,377
GHG emission rate per unit to sales*1 (Scope1+2)	Non-consolidated	t-CO_2e/ million yen	2.33	2.04	1.96	2.03	1.79	—
Scope3*2	Non-consolidated	t-CO_2e	703,562	767,799	763,007	803,461	885,046	—
Energy consumption rate*3	Non-consolidated	*4	82.8	79.4	76.2	81.5	63.3	—
Scope1	Consolidated*5	t-CO_2e	253,785	228,791	220,243	238,958	230,424	—
Scope2	Consolidated*5	t-CO_2e	128,647	116,724	116,516	124,663	115,893	—
Scope1+2*6	Consolidated*5	t-CO_2e	382,432	345,514	336,759	363,621	346,316	—
Non-consolidated / consolidated (Scope1+2)		%	95.0	94.5	94.6	95.0	94.6	—

*1 Amount of emissions (t-CO2e)/non-consolidated sales (million yen)
*2 Data of each category: https://www.nissanchem.co.jp/eng/csr_info/index/esg_data.html
*3 Energy consumption/non-consolidated sales
*4 FY2013 as a base of 100
*5 Nissan Chemical Corporation and consolidated subsidiaries with manufacturing facilities. (Nihon Hiryo Co., Ltd., Nissan Chemical America Corporation, NCK Co., Ltd.)
*6 Due to rounding, some figures for total of Scope 1+2 in the upper rows do not match.

Mitigation of Climate Change

Web https://www.nissanchem.co.jp/eng/csr_info/responsible_care/environment/reduction.html