

4. Scenario Analysis Example Disclosure (Domestic and Overseas)

4-1 Domestic Disclosure Examples

4-2 Overseas Disclosure Examples

Chapter 4. Scenario Analysis Example Disclosure (Domestic and Overseas)

Provide examples of national and international disclosures on scenario analysis based on the latest findings

Industry classification in each case is based on TCFD endorsement information.

4. Scenario Analysis Example Disclosure (Domestic and Overseas)

4-1 Domestic Disclosure Examples

4-2 Overseas Disclosure Examples

Chapter 4. Scenario Analysis Example Disclosure (Domestic and Overseas)



Provide examples of national and international disclosures on scenario analysis based on the latest findings

4-1

[Examples of domestic and overseas scenario analysis: domestic list by sector (1/2)]

For the 3 steps that differs greatly by sector, 28 domestic and 15 overseas (total of 43) examples of scenario analysis is introduced

Sector	Company Name	STEP3. Identify and define range of scenarios		STEP4. Evaluate business impacts		STEP5. Identify potential responses	
		Step 1	Pick the scenarios	Step 1	Sort out the financial items	Step 1	Understand the current measures
		Step 2	Obtain information on the future	Step 2	Consider formulas, and calculate Gap with the current situation	Step 2	Consider future measures
		Step 3	Sort out the future world view	Step 3		Step 3	Consider specific actions
Financial	Sompo Holdings, Inc. <div>Securities Report</div>				●		●
	Dai-ichi Life Holdings, Inc.				●		
	The Norinchukin Bank		●		●		●
	Mizuho Financial Group, Inc.		●		●		●
Energy	J-POWER		●		●		
	The Chugoku Electric Power Company, Inc.				●		●
Transportation	Mitsui O.S.K. Lines, Ltd.		●		●		●
	East Japan Railway Company				●		
Materials, Building	KH Neochem Co., Ltd.				●		
	JFE Holdings, Inc.		●				
	TODA CORPORATION		●		●		●
	LIXIL Corporation				●		●
Agriculture, Food, and Forest Products	Kameda Seika Co., Ltd. <div>Securities Report</div>		●		●		
	Kirin Holdings Company, Limited				●		
	FUJI OIL HOLDINGS INC.				●		●

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【Examples of domestic and overseas scenario analysis: domestic list by sector (2/2)】

Sector	Company Name	STEP3. Identify and define range of scenarios	STEP4. Evaluate business impacts	STEP5. Identify potential responses
		Step 1 Pick the scenarios	Step 1 Sort out the financial items	Step 1 Understand the current measures
		Step 2 Obtain information on the future	Step 2 Consider formulas, and calculate	Step 2 Consider future measures
		Step 3 Sort out the future world view	Step 3 Gap with the current situation	Step 3 Consider specific actions
Trading, Retail	J. Front Retailing Co., Ltd.		●	●
	Isetan Mitsukoshi Holdings Ltd. Securities Report	●		
	Mitsubishi Corporation			●
Electricity, Machinery, Communication	NTT DATA Corporation		●	●
	Ebara Corporation	●		●
	Seiko Epson Corporation Securities Report		●	●
	NEC Corporation	●	●	
	Panasonic Holdings Corporation	●		●
Consumer Discretionary, Pharmaceutical or Food	Shiseido Company, Limited		●	●
	SEKISUI CHEMICAL CO., LTD.	●	●	●
	Nichirei Corporation		●	●
Service (other)	Members Co., Ltd. Securities Report		●	
	Recruit Holdings Co., Ltd. Securities Report		●	

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【Examples of domestic and overseas scenario analysis: Overseas list by sector】

Sector	Company Name	STEP3. Identify and define range of scenarios	STEP4. Evaluate business impacts	STEP5. Identify potential responses
		Step 1 Pick the scenarios	Step 1 Sort out the financial items	Step 1 Understand the current measures
		Step 2 Obtain information on the future	Step 2 Consider formulas, and calculate	Step 2 Consider future measures
		Step 3 Sort out the future world view	Step 3 Gap with the current situation	Step 3 Consider specific actions
Energy	NRG Energy Inc (US)	●		●
	Shell plc (UK)		●	
	Woodside Energy Limited (Australia)		●	●
Transportation	Canadian National Railway (Canada)		●	
	FirstGroup plc (UK)	●	●	
	Ford Motor Company (US)			●
Materials, Buildings	The Dow Chemical Company (US)			●
	Freeport-McMoRan Inc (US)	●		●
	Newmont Corporation (US)	●		●
Agriculture, Food, and Forest Products	J Sainsbury Plc (UK)		●	
	Mondi Group (UK)		●	
Electricity, Machinery, Communication	Eaton Corporation plc (US)	●		●
	Schneider Electric SE (France)			●
Consumer Discretionary, Pharmaceutical	Burberry Group PLC (UK)		●	
	Unilever plc (UK)	●	●	

Legend for upper right tag in p.4-5~4-77: X STEP numbers not listed in this practice guide, X STEP numbers listed but not on the page, X STEP numbers introduced on the relevant page

4-4

【Example of Securities Report : Sompo Holdings, Inc. (Financial, 1/2)】

3 4 5

Discloses quantitatively the impact that “policy risk” and “technological opportunities” has on the current asset management portfolio

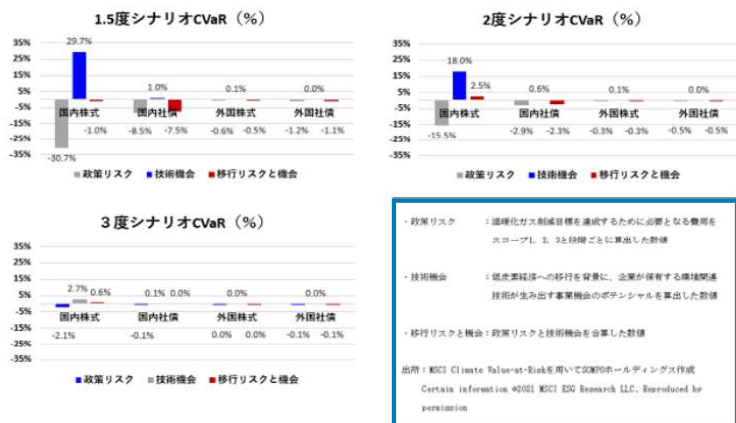
b. 移行リスク

移行リスクによる当社グループの保有資産（国内株式、国内社債、外国株式、外国社債）への影響については、今世紀末までの気温上昇を産業革命前から1.5度、2度、3度未満に抑えるシナリオを前提に、MSCI社が提供する気候バリューアットリスク（CVar: Climate Value-at-Risk）※3を用いて、低炭素な世界経済への移行が企業に及ぼす「政策リスク」と気候変動の緩和や適応に向けた取り組みによる「技術機会」が及ぼす影響を分析しました。

※3 MSCI Climate Value-at-Risk

- ・気候変動に伴う政策の変化や災害による企業価値への影響を測定する手法の一つ。
- ・気候関連のリスクと機会から生じるコストと利益の将来価値を現在価値に割り引いたものであり、当社資産運用ポートフォリオにおける各銘柄の保有時価ウェイトを考慮し、2021年3月末時点における影響度を算出。

＜SOMPOホールディングス 気温上昇シナリオ別 移行リスクと機会のCVar分析結果＞



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- ✓ The impact of risks and opportunities on assets held (Domestic stocks, domestic corporate bonds, foreign stocks, foreign corporate bonds) is disclosed by scenario

Described the method in which the impact of each risks and opportunities were calculated

- ・ **Policy risk** : The cost needed to achieve the GHG reduction target is calculated by Scope 1,2,3 in steps
- ・ **Technological opportunity** : A numerical calculation of the potential business opportunities created by companies' environmental procurement technologies in the context of the transition to a low-carbon economy
- ・ **Transition risk and opportunities** : Sum of policy risk and technology opportunities

4-5 Source : Sompo Holdings, Inc. Securities Report [EDINET \(edinet-fsa.go.jp\)](https://www.edinet-fsa.go.jp/EDINET/EDINETFSASearch.do)

【Example of Securities Report : Sompo Holdings, Inc. (Financial, 2/2)】

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Reviewing asset portfolio and developing and providing climate risk consulting services to improve resilience

ウ. レジリエンス向上の取組み

a. リスクへの対応

当社グループでは、保険引受先や投資先企業に対するグリーン移行支援を通じて社会の変化に対する企業のレジリエンスを高めると同時に、資産運用ポートフォリオの管理等により、移行リスク軽減に取り組んでおります。

投資先については、株式保有先のうち温室効果ガス（GHG）高排出の上位20社を中心とするエンゲージメントの強化により、グリーン移行を促進しております。公社債については満期償還時にGHG高排出セクターから低排出セクターへの入れ替えの促進等を通じて、資産運用ポートフォリオにおけるGHG排出量を2026年までに25%削減（2019年度比、株式・社債のGHG総排出量ベース）する目標を掲げ、移行リスクの削減と機会の捕捉を行ってまいります。また、保険引受先については、新設・既設の石炭火力発電や炭鉱開発（一般炭）への新規の保険引受停止や、オイルサンドおよび北極野生生物保護区（Arctic National Wildlife Refuge）でのエネルギー探掘プロジェクトへの新規保険契約を停止する方針を掲げ、ネットゼロ社会への移行を後押ししてまいります。ただし、一酸化炭素回収・利用・貯留技術（CCUS、CCU）やアンモニア混焼等の革新的な技術を有するなど、パリ協定の実現に資する削減効果が認められる場合には慎重に検討し対応する場合があります。

自社のGHG削減については、2030年までに2017年度比で60%削減する目標を掲げております。2021年度は、損害保険ジャパン株式会社の本社ビルの電力を再生可能エネルギー由来に切り替えるなど、目標達成に向けたロードマップに沿って着実に取組みを進めております。

b. 機会への対応

当社グループでは、「AgriSompo」による農業保険のグローバル展開を通じた食料安定供給への貢献や、気候リスクコンサルティングサービスの開発・提供、AIを活用した防災・減災システムの開発等、製品・サービスを通じて自然災害レジリエンスの向上に取り組んでおります。

エネルギー源については、「ONE SOMPO WINDサービス」（洋上風力発電事業者向け保険・リスクマネジメントサービス）をはじめとする再生可能エネルギーの普及に貢献する商品・サービスを展開するとともに、取組先との協業等によるカーボンニュートラルに貢献する新たな商品・サービスの開発にも取り組んでまいります。

また、ネットゼロ社会の実現に向けて、世界の様々な組織や団体等において、規制やガイドライン策定等の議論が活発に行われております。当社グループでは、これらのルールメイキングに対して積極的に関与しリードすることにより、社会のトランスフォーメーションに貢献するとともに、これらの取組を通じた知見の蓄積やレピュテーションの向上によってパートナーを呼び込むなどグループのビジネス機会の創出・拡大を図ってまいります。

- ✓ Based on scenario analysis, initiatives to improve resilience are described

- ・ **Review of the asset management portfolio**
⇒ Reduce GHG emissions of the asset management portfolios by 25% by 2025 compared to FY 2019 levels
- ・ **Review of underwriting of insurance contracts**
- ・ **Development and provision of climate risk consulting services**
- ・ **Responding to the company's reduction targets and roadmap**
⇒ By 2040, 80% reduction from FY 2017 levels

4-6 Source : Sompo Holdings, Inc. Securities Report [EDINET \(edinet-fsa.go.jp\)](https://www.edinet-fsa.go.jp/EDINET/EDINETFSASearch.do)

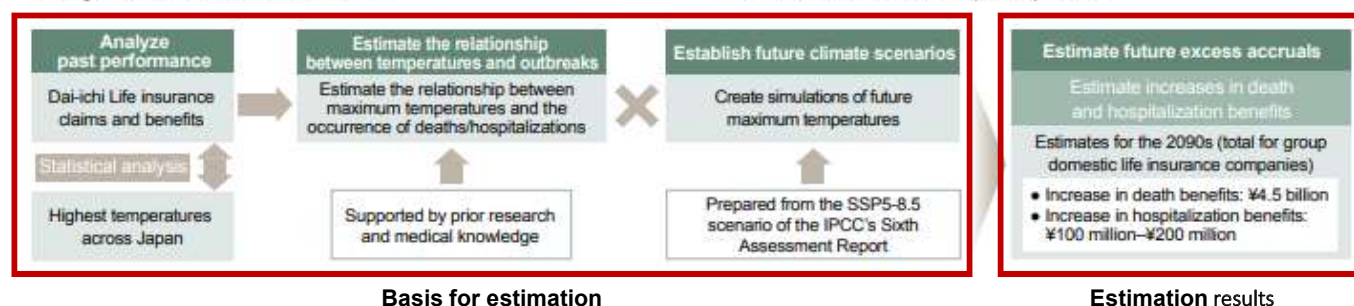
Quantitative disclosure of business impact in the life insurance business. Past results and external literature are also included as the basis for estimation

- ✓ In the business impact assessment, **the basis for and results of the estimates are clearly stated**

heat-related illnesses. Applying this to the results of hospitalization benefits paid by the three Group domestic life insurance companies in fiscal 2019 (approx. ¥60 billion)*²¹, we estimated the increase in hospitalization benefits in the 2090s to be ¥100 million–¥200 million.

While this study produced limited results, our analysis of hospitalizations led to a trial calculation based on a considerable number of assumptions on mortality comparisons due to the wide variety of diseases, the amount of statistical data, and the paucity of previous studies. We also need to consider the emergence of new risks in the future.

There is still no internationally established method for analyzing and quantifying the impact of climate change on the life insurance business, and we recognize that each company is conducting research and analysis through a process of trial and error. The Group has begun statistically analyzing the correlation between Dai-ichi Life's past performance and maximum temperatures, using various published papers*²² as reference. We will work to understand the risks for the entire Group while also considering investigating various disease outbreaks, approaches from a medical perspective, and impact studies of overseas Group companies.



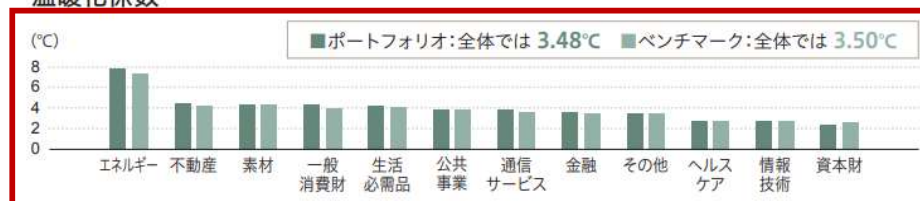
4-7 Source: Dai-ichi Life Holdings, Inc., "INTEGRATED REPORT 2022" https://www.dai-ichi-life-hd.com/en/investor/library/annual_report/2022/pdf/index_001.pdf

Analysis of policy risk and opportunity and physical risk is conducted using CVaR, and the impact in each scenario is quantitatively presented in terms of "impact amount / subject asset amount. Other analyses using global warming coefficients are also conducted

- ✓ Analyzed policy risks and opportunities and physical risks using **the CVaR (Climate Value-at-Risk)** method
- ✓ The impact of each scenario on asset holdings is shown as **"Impact / Total Assets"**. The analysis shows that the impact of transition risk is small, while physical risk is large in the 3°C scenario
- ✓ Other **analysis was conducted using a global warming potential**, which evaluates the level of GHG emissions of the target company that would result in global warming

CVaR (影響額/対象資産総額で表示)	気温上昇シナリオ別CVaR				1.5°CシナリオのCVaR		
	orderly 3° C	2° C	1.5° C	disorderly 1.5° C	ポートフォリオ	ベンチマーク	差
移行リスク	+ 0.1%	+ 0.3%	▲ 0.4%	▲ 19.1%	▲ 0.4%	▲ 1.8%	+ 1.4%
政策リスク	▲ 0.1%	▲ 1.0%	▲ 5.8%	▲ 31.6%	▲ 5.8%	▲ 6.3%	+ 0.5%
機会	+ 0.3%	+ 1.3%	+ 5.4%	+ 12.4%	+ 5.4%	+ 4.5%	+ 0.9%
物理的リスク	▲ 12.2%	▲ 7.1%	▲ 7.1%	▲ 7.1%	▲ 7.1%	▲ 7.7%	+ 0.6%
CVaR	▲ 12.1%	▲ 6.8%	▲ 7.5%	▲ 26.2%	▲ 7.5%	▲ 9.5%	+ 2.0%

温暖化係数



対象は、第一生命(株式・社債)、第一フロンティア生命(社債)、プロテクト(社債)で総額は約10兆円。ベンチマークは、国内社債:NomuraBPI・社債、外国社債:Barclays・グローバル社債Index、国内株式:TOPIX、外国株式:MSCI ACWI。データは2022年3月末時点のもの

(出所) Reproduced by permission of MSCI ESG Research LLC

4-8 Source: Dai-ichi Life Holdings, Inc., "INTEGRATED REPORT 2022" https://www.dai-ichi-life-hd.com/en/investor/library/annual_report/2022/pdf/index_001.pdf

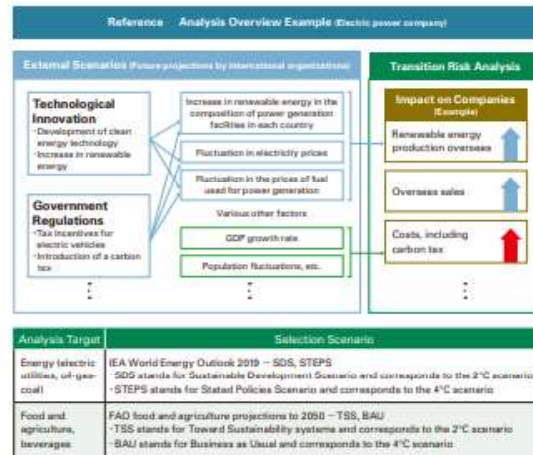
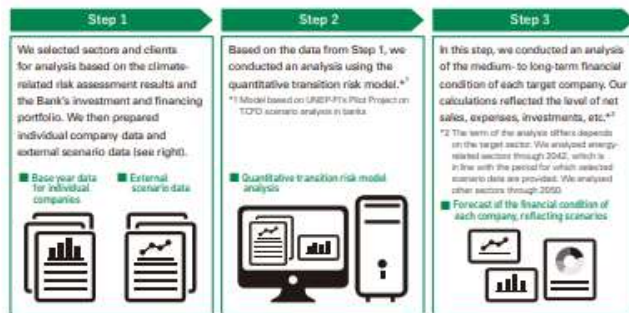
[Domestic Disclosure Examples : The Norinchukin Bank (Financial, 1/5)]

3 4 5

Four unique scenarios were developed by referencing multiple external scenarios for each analysis target

- ✓ Scenarios are divided into two axes, "2°C" and "4°C," and "Dynamic" and "Static," and illustrated in four quadrants
- ✓ The external scenarios referred to for each analysis are also clearly indicated

Transition Risk Scenario Analysis Overview



Four-Way Scenario Analysis



Four original scenarios are set up for each temperature range and approach to new capital investment

4-9 Source: The Norinchukin Bank, "SUSTAINABILITY REPORT 2022" https://www.nochubank.or.jp/en/sustainability/pdf/2022/all_en.pdf

[Domestic Disclosure Examples : The Norinchukin Bank (Financial, 2/5)]

3 4 5

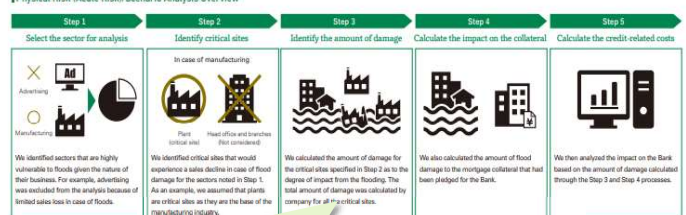
Quantitative disclosure of the analysis results for each scenario for transition risk and physical risk, with detailed description of the analysis steps

- ✓ Quantitative analysis by sector
- ✓ The impact of transition risk on the credit portfolio is described as limited
- ✓ Limited impact of physical risk on the credit portfolio

Transition Risk Scenario Analysis Results

- Electric Utilities and Oil-Gas-Coal Sectors**
The Static approach increased credit costs by approximately ¥4 billion 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 a 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 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 - ¥5 billion 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.

Physical Risk (Acute Risk) Scenario Analysis Overview



Detailed description of analysis steps

- STEP1: Narrow down the industries
- STEP2: Identify critical business sites
- STEP3: Identify the amount of damages
- STEP4: Calculate impact on collateral
- STEP5: Calculate credit-related expenses

Physical Risk (Acute Risk) Analysis Results

The accumulated total is expected to increase by about ¥5 billion in credit costs by 2050 if the impact of acute risks is summed up, resulting in limited impacts to the Bank's credit portfolio.

Physical Risk (Acute Risk) Analysis Overview

Analysis Target	1) Domestic critical sites of domestic lending clients at which flood damage is expected to occur 2) Mortgage collateral that has been pledged for the Bank
Excluded from Analysis Target	Sectors for which flood damage is not expected to occur (e.g., Finance, Advertising, Publishing)
Analytical Scenario	IPCC's RCP2.6 and RCP8.5 scenarios
Increase in Credit Costs	The accumulated total of credit costs is expected to increase by about ¥5 billion by 2050.

4-10 Source: The Norinchukin Bank, "SUSTAINABILITY REPORT 2022" https://www.nochubank.or.jp/en/sustainability/pdf/2022/all_en.pdf

[Domestic Disclosure Examples : The Norinchukin Bank (Financial, 3/5)]

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Quantitative analysis of the impact of physical risks on the income of rice, milk, and beef cattle producers in the agricultural sector, separately for cases where measures were taken to deal with rising temperatures and for cases where no measures were taken

- ✓ Conducted a scenario analysis of chronic risks to the agricultural sector that may have an impact on business continuity. **Quantitative analysis of the impact on producers' income**, despite the lack of analytical methodology, insufficient data, and model complexity

[Physical Risk (Chronic Risk) Scenario Analysis Overview]



[Methodology for Physical Risk (Chronic Risk) Scenario Analysis]

We implemented scenario analysis for chronic risks in the agricultural sector, which is vital to the Bank. The TCFD recommendations refer to the agricultural sector as an industry vulnerable to climate change. In addition, we conducted the scenario analysis because the climate change risk in the AFF industries is deemed to have considerable impact on the business continuity of the Bank. Meanwhile, as the scenario analysis for the agricultural sector has numerous limits in the model represented by 1) the lack of available methodologies established globally, 2) imperfect or poor data and 3) diversified and complicated impact channels, several assumptions and hypotheses are made in the analysis. In addition, note that the impact of the scenario analysis might be different from the actual impact on farm management because the analysis target is revenue, not income (i.e., the amount after deducting expenses, etc., from revenue).

We selected rice cultivation and animal husbandry (milk, beef cattle), for which there are numerous engaged farmers and high production volume, as analysis target items. In the analysis, while estimating the impact of higher air temperature due to climate change on production volume and product prices of the target items, we provisionally estimate the impact on revenue for producers conclusively. See page 26 for the detailed analysis method. In the analysis, we estimated changes in revenue for producers at the end of the 21st century compared with that at the end of the 20th century in two opposite directions, that is, the case where no measures will be taken against the case where appropriate measures will be taken to cope with temperature rise. In our analysis, we employed IPCC's RCP2.6 analysis scenario (corresponding to "temperature rise of 2°C" below) and RCP8.5 scenario (corresponding to "temperature rise of 4°C" below), therefore conducting analysis in four different patterns.

[Analysis Results for Rice Cultivation]

[Impact on production volume]

Temperature rise of 4°C: The production volume nationwide would decrease 6.4% as air temperature will exceed the suitable temperature for rice cultivation almost all over the country.
Temperature rise of 2°C: The production volume nationwide would increase 3.3% as air temperature will remain at a suitable temperature for rice cultivation for wider regions centering on East Japan.

[Impact on prices]

Temperature rise of 4°C: The price of rice would increase 1.4% due to decreased production volume although rice quality (percentage of first-class rice) could deteriorate.
Temperature rise of 2°C: The price of rice would decrease 1.6% due to increased production volume and a slight deterioration of quality.

[Impact on producers' revenue (without adaptive measures)]

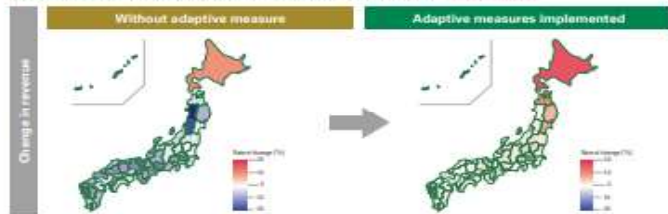
For a temperature rise of 4°C, the revenue associated with rice cultivation might decrease 5.0% at the end of the 21st century compared with that at the end of the 20th century due to a decline in production volume and quality deterioration.

On the other hand, for a temperature rise of 2°C, revenue is expected to increase 1.7%, reflecting the expected expansion of appropriate land areas for rice cultivation.

[Impact on producers' revenue (adaptive measures implemented)]

For a temperature rise of 4°C, revenue increased 3.5% nationwide (8.5% higher compared to the case where adaptive measures were not taken) by implementing two adaptive measures: 1) introducing high-temperature resistant varieties, and 2) moving forward the transplanting date of rice seedlings by 1-2 months. However, cost calculation related to the adaptive measures is difficult at this time, and therefore such calculation is not taken into consideration (in common with milk and beef cattle). Note that the relevant amounts might decrease at the income level after deducting expenses, etc., from revenue.

[Analysis Results for Rice Cultivation (with temperature rise of 4°C (RCP8.5 scenario))]



4-11 Source: The Norinchukin Bank, "SUSTAINABILITY REPORT 2022" https://www.nochubank.or.jp/en/sustainability/pdf/2022/all_en.pdf

[Domestic Disclosure Examples : The Norinchukin Bank (Financial, 4/5)]

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For transition risk, work on upgrading scenario analysis through expansion of target sectors and additional analysis of 1.5°C scenarios. Publish future projections for investments and loans considering climate change risks

- ✓ Assuming the impact of transition risk and carbon neutrality in 2050, upgrading of scenario analysis is underway through **expansion of target sectors and analysis using the 1.5°C scenario**

[Initiatives to Enhance the Transition Risk Scenario Analysis and Disclosures based on the TCFD Recommendations]

We began transition risk scenario analysis in the chemical sector, which we newly determined to be highly vulnerable to the impact of transition risk, in addition to the previous electric utilities, oil-gas-coal, food and agriculture and beverages sectors. In addition, assuming carbon neutrality at around 2050, we began analysis utilizing the Net Zero 2050 scenario (1.5°C scenario), provided by the Network for Greening the Financial System (NGFS), besides the 2°C scenario announced by the International Energy Agency (IEA) and the Food and Agriculture Organization (FAO). Meanwhile, the TCFD revised the Annex to TCFD's Final Report and released the new Guidance on Metrics, Targets and Transition Plans in October 2021. We will enhance our TCFD disclosure from fiscal 2023 adopting these changes. By undertaking these measures, we intend to address more sophisticated analysis and enhanced TCFD disclosures. Moreover, we will continue to work on client engagement (constructive dialogue) on climate-related issues by leveraging scenario analysis results especially for supporting their transition to a low-carbon society.

		FY2021	FY2022
Transition risk	Target sector	Energy (electric utilities, oil-gas-coal), food and agriculture, beverages	Energy (electric utilities, oil-gas-coal), chemical, food and agriculture, beverages
	Scenario	IEA, FAO 2°C scenario, 4°C scenario	IEA, FAO 2°C scenario, 4°C scenario, NGFS 1.5°C scenario
Physical risk	Target sector	Acute risk: Analysis of flood damage Chronic risk: Analysis of the impact of temperature rise and precipitation variations on the agricultural sector (rice cultivation, animal husbandry)	
	Scenario	IPCC 2°C scenario, 4°C scenario	

Note: The underlined portions represent the areas where we are currently reinforcing our own efforts.

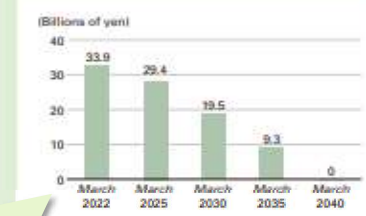
[Managing Climate-Related Risks]

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-related risks, in investment and financing.

In 2019, we established the Environmental and Social Policy as basic and social issues. In addition, as part of our investment policy, we established environmental and social considerations for investment and financing. Concern of negative environmental and social impacts on sectors include coal-fired thermal power, palm oil, forestry and mining. We conduct due diligence on projects based on the Equator Principles.

[Finance Balance for the Coal-Fired Thermal Power Plant Project (future prospects)]

The Bank does not conduct any investment and/or finance for new coal-fired thermal power plants, in principle, except for cases to cope with emergency situations such as disasters, in accordance with the Policy on Environmental and Social Considerations in Financing and Investment Activities. The Bank aims to achieve a zero balance until around 2040 regarding financing for coal-fired thermal power plant projects.



[Finance Balance for the Coal-Fired Thermal Power Plant Project]

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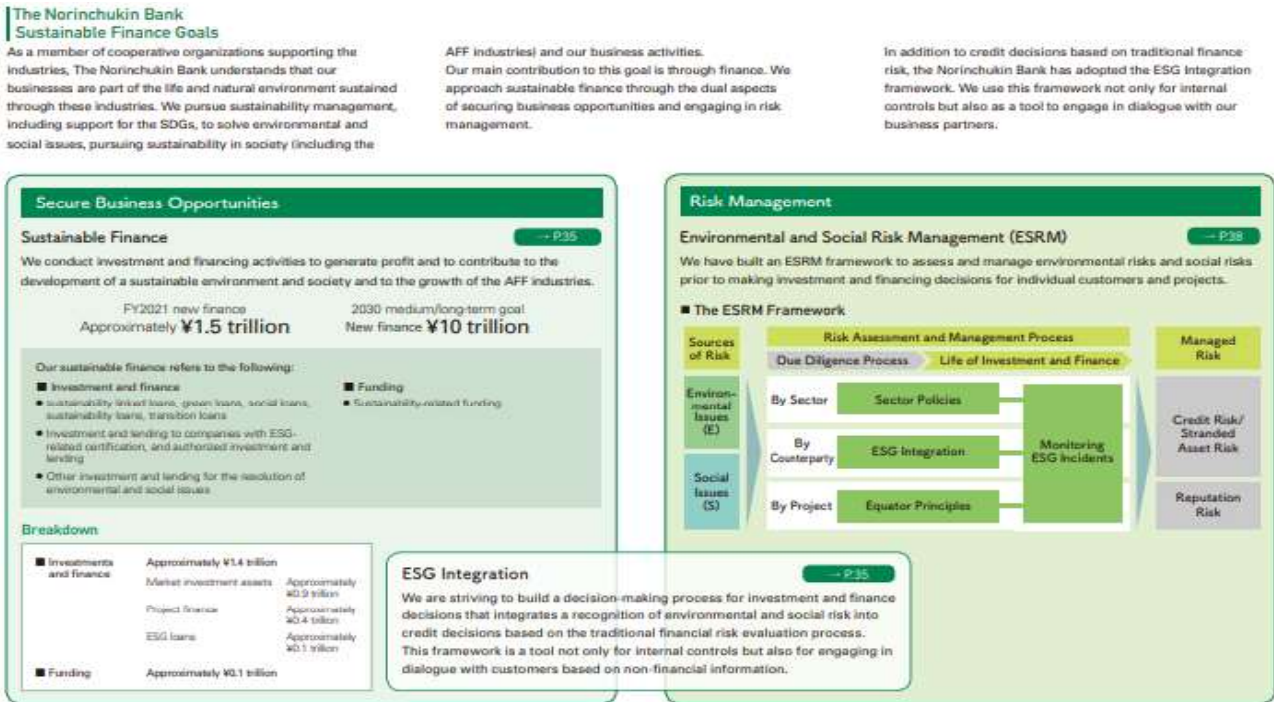
4-12 Source: The Norinchukin Bank, "SUSTAINABILITY REPORT 2022" https://www.nochubank.or.jp/en/sustainability/pdf/2022/all_en.pdf

[Domestic Disclosure Examples : The Norinchukin Bank (Financial, 5/5)]

3 4 5

As a measure to expand opportunities, set a mid- to long-term target of 10 trillion yen in new sustainable finance in 2030, and promote integration of business strategies with environmental and social responses, including climate change

- Based on the impact of climate change on the agriculture, forestry, and fisheries industries, such as stranded assets in the portfolio and wind and flood damage, the plan describes investment and financing plans that lead to the development of the agriculture, forestry, and fisheries industries from an environmental and social perspective, on the premise of securing earnings through the acquisition of business opportunities.



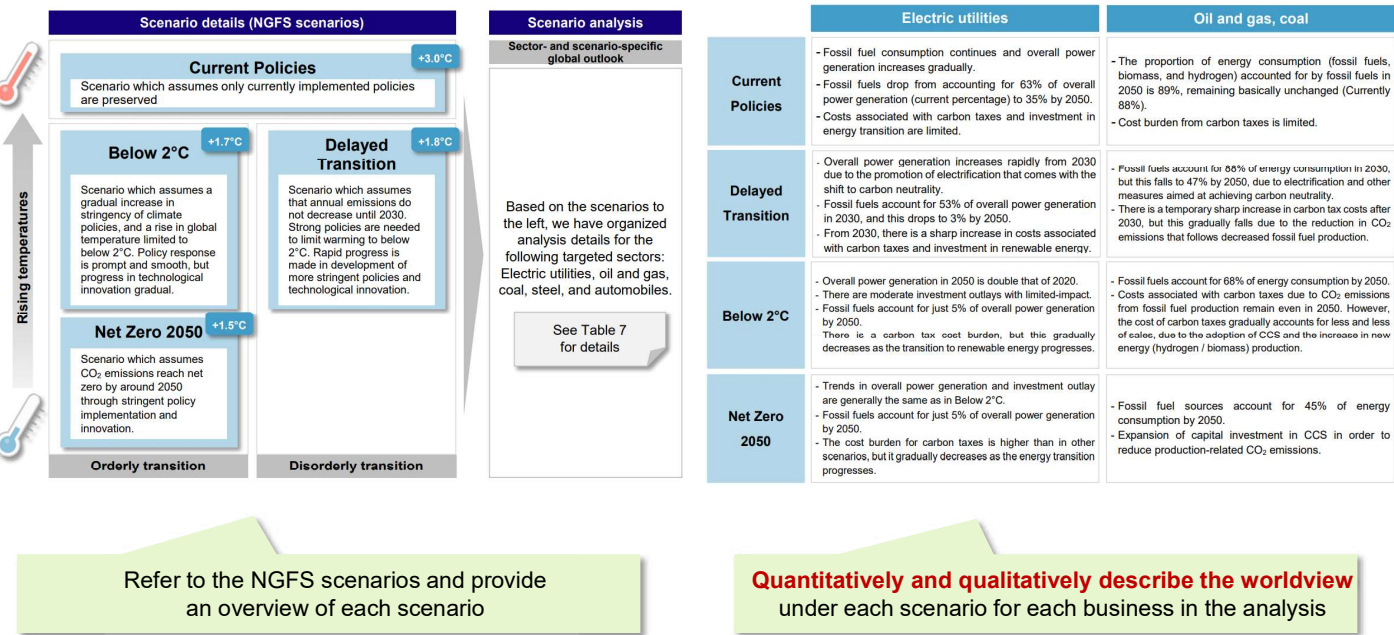
4-13 Source: The Norinchukin Bank, "SUSTAINABILITY REPORT 2022" https://www.nochubank.or.jp/en/sustainability/pdf/2022/all_en.pdf

[Domestic Disclosure Examples : Mizuho Financial Group, Inc. (Financial, 1/3)]

3 4 5

Quantitative description of the world view for each sector and scenario

- Specify the external scenarios referred to and describe the worldview in each scenario quantitatively and qualitatively for each project analyzed



4-14 Source: Mizuho Financial Group, Inc., "TCFD Report 2022" [tcfdr_report_2022.pdf \(mizuhogroup.com\)](https://www.mizuho-fg.com/en/ir/2022/03/tcfdr2022)

[Domestic Disclosure Examples : Mizuho Financial Group, Inc. (Financial, 2/3)] 3 4 5
In the business impact assessment, credit costs are quantitatively analyzed for each scenario. Demonstrate resilience by stating that the financial impact is limited

- ✓ **Quantitative description of financial impact due to risk, with credit cost estimates presented by scenario**
- ✓ **Limited financial impact also indicates that the company is resilient to risk**

● Scenario analysis:

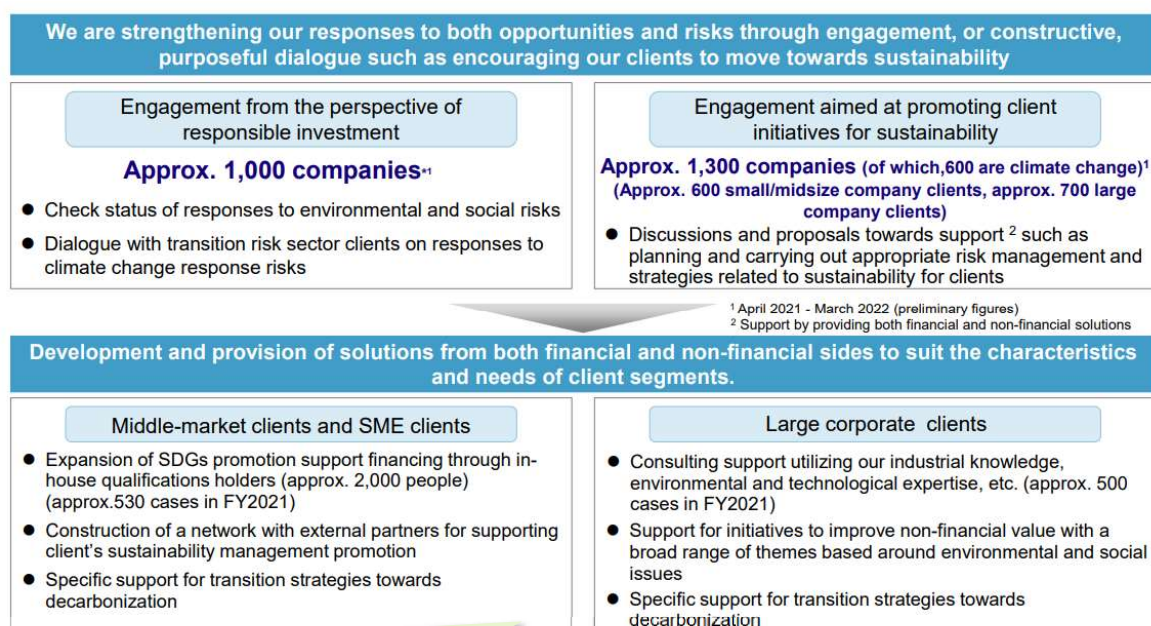
- Transition risk

Scenario	<u>Network of Central Banks and Supervisors for Greening the Financial System (NGFS)³</u> <u>Net Zero 2050 (1.5°C) / Below 2°C / Delayed Transition / Current Policies scenarios</u>
Analysis method	We specify a parameter for evaluating the impact of risks and opportunities faced by clients in the sector subject to analysis. We then analyze changes in Mizuho's credit costs by formulating an outlook for the impact on clients' financial results, based on changes to the parameter under the scenario.
Targeted sectors	<u>Electric utilities, oil, gas, coal, <u>steel</u>, and automobile sectors (worldwide)</u>
Period	2050
Credit costs	<u>Cumulative increase in the above sectors through 2050 (difference with Current Policies scenario)</u> Net Zero 2050: ¥1.2 trillion Below 2°C: ¥60 billion Delayed Transition: ¥1.1 trillion
Implications and necessary actions	<ul style="list-style-type: none"> • The increase in credit costs is the total through 2050, and the impact on the Mizuho group's finances is <u>limited</u>. • We confirmed the importance of moving forward a rapid and smooth transition (orderly transition) towards a low-carbon society. • We will further enhance our engagement with clients to support their progress on responding to climate change in an orderly fashion. • We will conduct scenario analysis accounting for clients' transition plans and apply it to more in-depth engagement.

4-15 Source: Mizuho Financial Group, Inc., "TCFD Report 2022" [tcfreport_2022.pdf \(mizuhogroup.com\)](#), "Integrated Report" ([data2203_all.pdf \(mizuho-fg.co.jp\)](#))

[Domestic Disclosure Examples : Mizuho Financial Group, Inc. (Financial, 3/3)] 3 4 5
Demonstrate resilience to climate change through engagement and providing solutions tailored to customer segments

- ✓ **Stated that Mizuho will enhance the resilience of both clients and Mizuho by providing engagement solutions**



[From TCFD Report (p.31)]

"By undertaking while considering clients' sustainable growth, improved corporate value, and strengthened industrial competitiveness over the medium to long term, we will actively develop and provide financial products and services to support clients' initiatives to transition to a low-carbon society"

4-16 Source: Mizuho Financial Group, Inc., "TCFD Report 2022" [tcfreport_2022.pdf \(mizuhogroup.com\)](#), "Integrated Report" ([data2203_all.pdf \(mizuho-fg.co.jp\)](#))

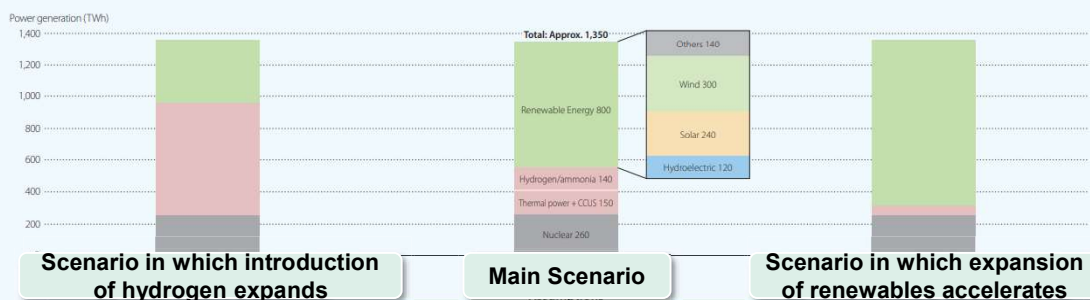
[Domestic Disclosure Examples : J-POWER (Energy, 1/2)]

3 4 5

Conducted a multi-year scenario analysis (2030 and 2050). The 2030 scenario is generally consistent with the Japanese government's NDC (national reduction target), and for 2050, the 1.5°C is the main scenario

- ✓ In the 2050 scenario analysis, the APS scenario was selected as the main scenario and used the Japanese 2050 power configuration in the APS scenario for reference
- ✓ For **renewable energy and thermal power** that are particularly impactful to the company, created **an original scenario that changed the assumptions** from the main scenario

Energy mix in Japan



- Development in hydrogen power generation technology
- Realization of CCUS at low cost and on large scale
- Stagnation of expansion of power grid
- Insufficient locations for siting of renewables
- Rise in development cost of renewables
- Stagnation of decentralization through solar power + storage batteries

- Progress of decentralization in small-scale demand (solar power + storage batteries)
- Expansion of power grid
- Sufficient locations for siting of renewables
- Achievement of CCUS at appropriate cost

- CCUS unachieved/costly
- Insufficient CO₂ storage sites
- Obstacles to fossil fuel procurement (supply chain collapse)
- Powerful policy incentives for renewables
- High carbon pricing

4-17 Source: J-POWER Group "J-POWER Group Integrated Report 2022" (<https://www.jpowers.co.jp/english/ir/pdf/2022.pdf>)

[Domestic Disclosure Examples : J-POWER (Energy, 2/2)]

3 4 5

In the 2030 scenario analysis, the financial impacts of the thermal and renewable energy are quantified in the main/risk scenarios

- ✓ **Estimated the financial impact on thermal and renewable energy projects** under the 2030 main scenario risk scenario

Strategy: 2030 Main Scenario (40% reduction in real CO₂ emissions) Financial impact

A world conforming to Japan's NDC has been assumed as a precondition.

Factors	Impact in value	
Decrease in quantities of electric power sales from thermal power	Decrease in profits of approx. 10 billion yen	Electric power sales from thermal power will decrease by approx. 40% mainly due to the temporary suspension of abolition of non-efficient coal-fired thermal power, resulting in an estimated decrease of approx. 10 billion yen in ordinary income from dispatched electric power.
Carbon pricing	—	No introduction of carbon pricing envisioned for 2030 profile under existing NDC.
Biomass/ammonia mixed combustion	—	We will reduce emission intensity through mixed combustion with either biomass or ammonia, and will constrain the decrease in electric power sales. There are issues to be solved such as procurement of biomass and ammonia, but we will work on them as much as possible.
Introduction of CCUS	—	We will take the initiative in tackling a feasibility study for domestic CCS and take on the challenge of commencing capture and storage from 2030.
Impact in value due to fluctuations in charges for electric power sold	—	—
GENESIS Matsushima Plan	—	Reduces CO ₂ emissions by 10% by adding gasification facilities, and other measures to existing Matsushima thermal power to "supcycle". Eventually aims to realize CO ₂ -free hydrogen power generation.
Reduction in thermal power repair expenses and renewal investment	140	Containing repair expenses and renewal investment for thermal power plants prior to constant of operations anticipated from 2030. Actual repair costs and replacement investment for coal-fired thermal power will be approx. 45 billion yen per year and investment for renewal will be about 20 billion yen per year, some of which can be reduced.
Expansion of revenues for renewable energy (Wind power)	Increase in profits of approx. 10 billion yen	As of March 31, 2022, the total output of wind power plants in operation and such plants on which we launched research for construction will increase by approx. 1.6 million kW from FY2017. Electric power generated in cases where all operations for wind power generation that have yet to enter operation commence in 2030 will come to approx. 3.3 billion kWh.
Expansion of revenues for renewable energy (Hydroelectric)	—	For the electric power sales of approx. 9 billion kWh of hydroelectric power generation that is not subject to FIT, should sales prices rise by 0.1 yen due to sensitivity to factors such as a rise in contract sales prices and non-fossil fuel certificate sales prices, profits will increase by approx. 800 million yen. Sensitivity for each 0.1 yen/kWh increase in price.
	+40 million yen +140 impact	The decrease in profit from coal power covered by expanded profits resulting from expansion in renewables.

- ✓ For the impact on thermal power in the main scenario, the decrease in profit was estimated to be around 10 billion yen due to the decrease in sales volume

Strategy: 2030 Risk Scenario (60% reduction in real CO₂ emissions) Financial impact

A world conforming to the NZE scenario has been assumed as a precondition.

Carbon prices (developing countries): \$130/tCO₂ (Highest value among prices in the year 2030 as estimated within the IEA WEO2021).

Electric power charges increase of 0.10 yen/kWh

Factors	Impact in value	
Decrease in quantities of electric power sales from thermal power	Decrease in profits equivalent to approx. 10 billion yen	Regarding amounts for which CO ₂ emissions reductions are in excess of 40%, because emissions will be reduced, mixed combustion using low-carbon fuels, there will be no decrease in electric power sales equal to 40% of m. Electric power sales for thermal power will be about 60% of the record years of FY2019-FY2019.55 billion kWh.
Carbon pricing	Increase in costs equivalent to approx. 260 billion yen	Impact in value accompanying the 40% in emissions for which measures could not be taken after the reduction of sales. Assuming CO ₂ emissions (Gt/Gt) 30/CO ₂ , the 20% reduction in addition to the main scenario (40% decrease) will be covered based on the assumption of using CCS and renewables.
Biomass/ammonia mixed combustion	Increase in costs equivalent to approx. 50 billion yen to 140 billion yen	Mixed combustion with either biomass or ammonia, CCUS and other measures will be taken for 20% reduction in CO ₂ emissions. Total incremental cost when various measures are taken.
Introduction of CCUS	—	→ Calculated by J-POWER using Cost Review Sheet by Power Generation Cost Verification Working Group (2021) as a reference. Wind power generation will require approx. 5 times of existing supply power.
Impact in value due to fluctuations in charges for electric power sold	0-330 billion yen in revenues	It is assumed that new wind power facilities at J-POWER are successfully developed in a similar fashion through measures to accelerate the introduction of renewables, etc.
GENESIS Matsushima Plan	—	Incremental revenues when electric power sales for hydroelectric power are 9 billion kWh and electric power prices have increased by 0.10 yen/kWh.
Reduction in thermal power repair expenses and renewal investment	140	Under the risk scenario, it is assumed that power generation costs will rise due to the introduction of carbon pricing and CO ₂ emissions reduction technology. However, the overall timeframe for carbon neutrality will likely differ depending on the degree to which society at large releases rates in electric power prices. Aspects with financial impact on J-POWER businesses also change considerably according to this timeframe.
Expansion of revenues for renewable energy (Wind power)	Increase in profits/revenues of approx. 20 billion yen	—
Expansion of revenues for renewable energy (Hydroelectric)	Increase in profits of approx. 0-140 billion yen	—
	Impact of 350* +120 billion yen	—

- ✓ In the risk scenario, the impact of the increase in cost due to the introduction of the carbon tax was estimated to be around 260 billion yen
- ✓ The assumptions are based on the world view for each scenario

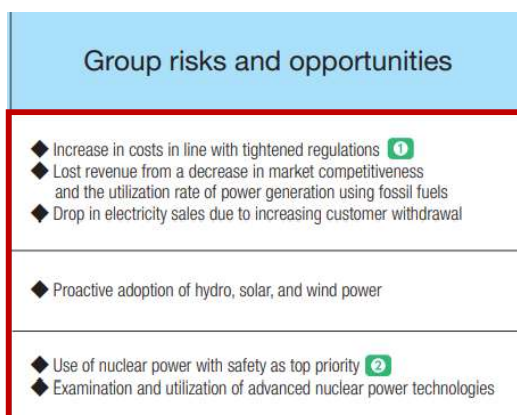
- The calculations were compliant toward an NZE scenario world view
- Carbon Price (developing countries) : \$130/tCO₂ (The highest price out of the IEA WEO2021 2030 predicted price is used)
- Electricity price : 0~10 yen/kWh increase

4-18 Source: J-POWER Group "J-POWER Group Integrated Report 2022" (<https://www.jpowers.co.jp/english/ir/pdf/2022.pdf>)

[Domestic Disclosure Examples : The Chugoku Electric Power Company, Incorporated (Energy)] 3 4 5

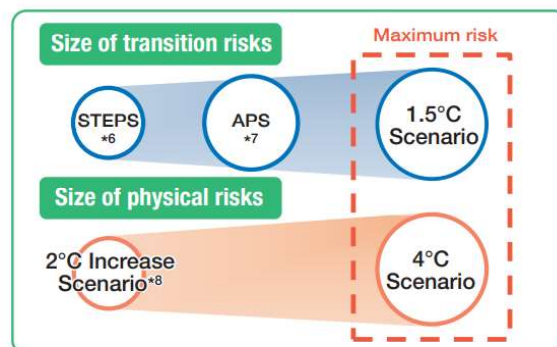
Quantified the financial impact of climate change risks and opportunities and stated that the business is resilient under both 1.5°C and 4°C scenarios

- ✓ **Quantitative description of the financial impact of each risk/opportunity**



- ✓ **Highlighted the resilience of the business as being able to handle both scenarios**

Both the 1.5°C Scenario and the 4°C Scenario have been set as the main scenarios in which climate change risks are at their maximum severity.



By working on measures that assume the main scenarios will come to fruition, we will be able to respond to both scenarios and engage in business with our resilience assured. While considering the uncertainties and risks surrounding technological development, we will anticipate multiple scenarios without limiting ourselves to specific initiatives, and move forward with our road map for carbon neutrality in 2050.

Main financial impacts of climate change-related risks and opportunities⁴⁵

① Increasing costs in line with tighter regulations

Financial impact from additional procurement of Non-Fossil Fuel Energy Certificates (Average agreed price on the Non-Fossil Value Trading Market in FY2022)

60 million yen/100 million kWh

② Use of nuclear power with safety as top priority

Financial impact on raw material costs in line with the relaunch of Shimane Unit 2 (figures from FY2022)

700 million yen/1% utilization rate

③ Increasing recovery and response costs in line with damage to facilities

Damage costs (Impact of the heavy rainfall disaster in July 2018)

3.7 billion yen

④ Decreasing water flow rates (decreasing hydroelectric power generation)

Financial impact on raw materials due to decreasing water flow rates (figures from FY2022)

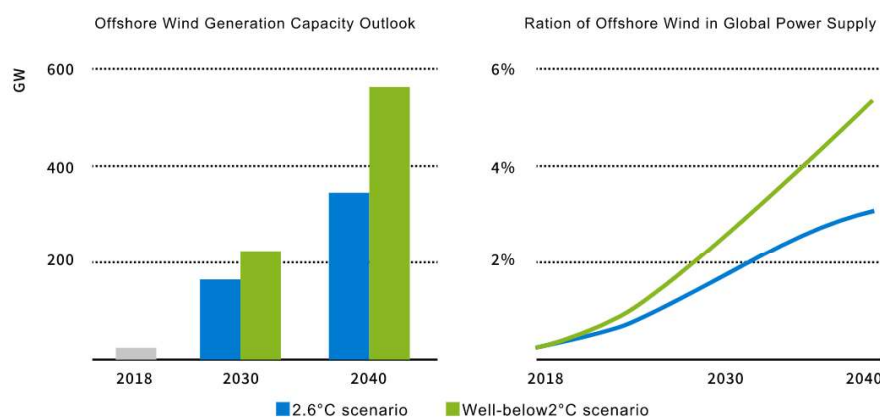
300 million yen/1% water flow rate

4-19 Source : The Chugoku Electric Power Company, Incorporated, Integrated Report 2022, [integrated-02.pdf \(energia.co.jp\)](#)

[Domestic Disclosure Examples : Mitsui O.S.K. Lines, Ltd. (Transport, 1/4)] 3 4 5

Provides quantitative disclosure of its worldview in multiple scenarios in line with its business models and utilized the quantitative figures for impact analysis

- ✓ **A quantitative and qualitative description of the worldview provided under each scenario in line with the company's business model**
- ✓ **The numerical numbers that were introduced to explain the worldview were used as a parameter in the estimation of the business impact assessment**



We estimated based on the assumptions used in scenario analysis that by maintaining such comprehensive initiatives, the following profitopportunities can be expected in the offshore wind power-related business field as a whole (as of 2050).

(Billion yen)	2.6° C	Well-below 2° C	1.5° C
Offshore wind power-related business	9.0	17.0	24.0

4-20 Source: Mitsui O.S.K. Lines, Ltd. Website Task Force on Climate-related Financial Disclosures (<https://www.mol.co.jp/en/sustainability/environment/tcfd/>)

[Domestic Disclosure Example : Mitsui O.S.K. Lines, Ltd. (Transport, 2/4)]

3 4 5

Set up multiple scenarios (1.5°C /less than 2°C /2.6°C), and discloses the business impact as of 2050 quantitatively and narratively by scenario and factor

- ✓ In the business impact assessment, the following factors are considered to have an impact on the business: (1) cargo movement change, (2) fuel costs, (3) carbon taxes, (4) introduction of alternative fuel vessels, and (5) new business opportunities. Quantitative impacts are illustrated by scenario using waterfall charts.



Based on the risk of cost increases, cost reduction through risk mitigation measures, and sales opportunities, it is stated quantitatively and in a narrative that the profit level in 2050 is resilient

- Carbon tax will be a major negative factor (▲270 billion yen)
- Substantial reduction in carbon tax due to introduction of next-generation fuel vessels (+240 billion yen)
- Expanding new business opportunities in clean energy business areas (+300 billion yen)
- Efforts to pass on cost increases from the carbon tax (+110 billion yen)
- take appropriate measures in the form of efficient operations and other new businesses

4-21 Source: Mitsui O.S.K. Lines, Ltd. Website Task Force on Climate-related Financial Disclosures (<https://www.mol.co.jp/en/sustainability/environment/tcfd/>)

[Domestic Disclosure Examples : Mitsui O.S.K. Lines, Ltd. (Transport, 3/4)]

3 4 5

To address climate change risks, investment policies over the next three years will be changing and a new investment plan was announced in addition to the environmental investments that were determined before

- ✓ As a result of the scenario analysis, a substantial change to the investment policy has been made
- ✓ An additional environmental investment of 360 billion yen has been decided for 2022-2024, with the investment breakdown being disclosed

Carry on 5 initiatives in Environmental Vision 2.1, and boost investment in next 3 years up to JPY 360bil. from JPY 100bil. in RP2021.

	Alternative Fueled Fleet	Low-, Decarbonization business expansion
Achievement FY2021	Introduced "MOI Group Environmental Vision 2.1"	
	<ul style="list-style-type: none"> Set out GHG Reduction Roadmap Introduced Internal Carbon Pricing (ICP) in new investment decision 7 orders of new-build LNG-fueled vessels 	Good progress in low-emission project investment (LNG carriers, LPG/Ammonia carriers)
Plan FY2022	<ul style="list-style-type: none"> Active expansion of LNG-fueled fleet despite strong sentiment of ship price Start PDCA towards GHG emissions intensity reduction target by 2030 (1.4% p.a.)*1 	<ul style="list-style-type: none"> Continue active investment in lowemission projects (LNG carriers, LPG/Ammonia carriers, wind power) Develop new designs of Ammonia-fueled Ammonia carriers

Announced 360 billion yen of additional environmental investment

FY22-24 Investment Cash-out

Unit: JPY bil. Cash-out amount during FY22-24		Decisions already made before end-FY21	Investments to be decided in FY22-24	Total	Expected IRR	Detail
Environmental Investment in Strategy	(1) Alternative Fueled Fleet	90.0	245.0	335.0	≥5%	LNG-fueled bulkers, PCCs, etc. Zero emission vessel
	(2) Growth of Low- & ZeroEmission Business	80.0	115.0	195.0	>5%	LNG carriers, LPG/Ammonia carriers, Wind Power business and its associated business.
	(3) Other Business Expansion, Asset Replacement, M&A, etc.	100.0	370.0	470.0	>8%	Group company's business, Replacement of existing fleet
Investment Total		270.0	730.0	1,000.0		

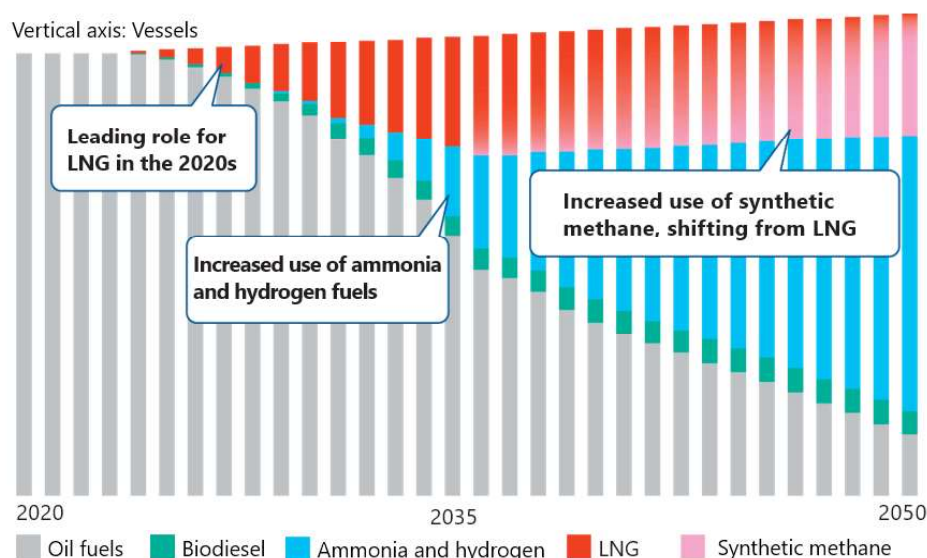
4-22 Source: Mitsui O.S.K. Lines, Ltd. Website Task Force on Climate-related Financial Disclosures (<https://www.mol.co.jp/en/sustainability/environment/tcfd/>)

[Domestic Disclosure Examples : Mitsui O.S.K. Lines, Ltd. (Transport, 4/4)] 3 4 5

A transition path, along with five specific strategies to reduce GHG emissions were disclosed

✓ **Diagram of transition plan** for achieving net zero in 2050 along with investment targets

MOL has established an interim target of a 45% reduction in GHG emission intensity from transport by 2035 and indicated a specific pathway for achieving net zero GHG emissions by 2050. We have established five specific strategies for reducing GHG emissions, including the adoption of clean alternative fuels, enhancement of energy-saving technologies, and expanding decarbonization projects and have set a target of investing around 530 billion yen in the decarbonization field over the three years from 2022 to 2024 (reduction of our own GHG emissions: 335 billion yen; contribution to reduction of society's GHG emissions: 195 billion yen).



Reference Figure: Projection of Changes in Composition of MOL's Oceangoing Fleet

4-23 Source: Mitsui O.S.K. Lines, Ltd. Website Task Force on Climate-related Financial Disclosures (<https://www.mol.co.jp/en/sustainability/environment/tcfd/>)

[Domestic Disclosure Examples : East Japan Railway Company (Transportation, 1/2)] 3 4 5

The financial impact of the transportation services business is estimated based on population, GDP, and other data from the socioeconomic scenario (SSP). The basis for the calculations is also clearly stated and quantitatively evaluated and disclosed

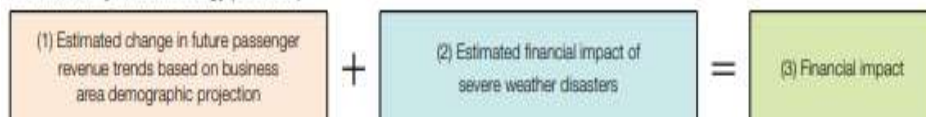
✓ Conducted scenario analysis using socioeconomic scenarios (SSP) for the transportation service business

✓ **Quantitative analysis of the impact on passenger revenue is disclosed**

(2) Details of scenario analysis (physical risks)

As a baseline for the analysis, passenger revenue is estimated based on future demographics, and a scenario analysis is conducted for the Transportation services business. In the Transportation services business, future passenger volume is expected to decrease due to Japan's declining birthrate and aging population, and the impact is expected to be particularly significant in rural areas. In order to ascertain the financial impact of these factors and to verify the appropriateness of our business and environmental strategies, we conducted the following scenario analysis for fiscal 2051.

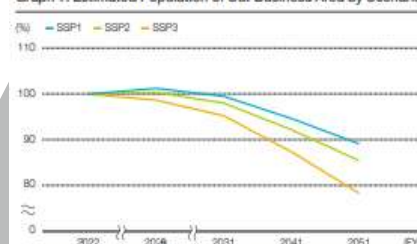
Scenario Analysis Methodology (Overview)



(1) Estimated passenger revenue trends based on business area demographic projections

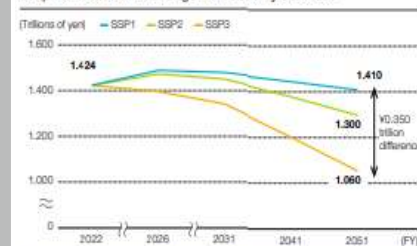
We estimated changes in passenger revenue up to fiscal 2051 based on data such as the Shared Socioeconomic Pathways (SSPs) data on population⁴⁴ and gross domestic product (GDP)⁴⁵, which are used across a range of fields in climate change research (Graph 1, see page 60). There was approximately 11% difference in the population estimate for fiscal 2051 between the scenario of Sustainability (SSP1), which is our goal, and the opposing scenario of Regional Rivalry (SSP3), and a ¥350 billion difference in estimated passenger revenue (Graph 2, page 60). Our estimate of passenger revenue is based on projections for the post-COVID-19 era.

Graph 1: Estimated Population of Our Business Area by Scenario



Estimates of future population in our business areas based on Japanese SSP population estimates by municipality, GDP and other data

Graph 2: Trends in Passenger Revenue by Scenario



Estimated future passenger revenues by SSP based on future population estimates within our business areas

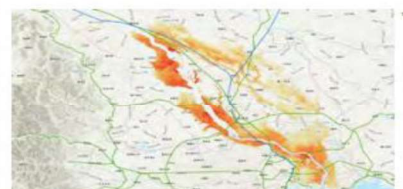
4-24 Source : JR East Group Report (https://www.jreast.co.jp/e/environment/pdf_2022/all.pdf)

Quantitatively estimate the financial impact of river flooding using external information such as data on routes that are expected to be affected and maps of expected inundation zones published by the government and disclose the results of the estimates for each scenario

- ✓ For the rivers selected for evaluation, the financial impact of inundation caused by the planned scale of rainfall is **quantitatively evaluated**
- ✓ The estimation method is based on the value of assets of main lines, planned suspension of services due to the disaster, loss of passenger revenues according to the time required for restoration, and restoration costs of railroad assets such as stations and tracks

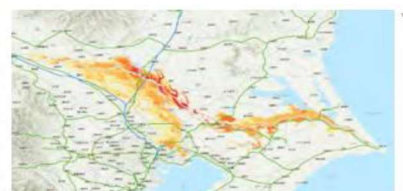
Estimated Financial Impact for Flooding of the Arakawa River (Upstream)*a

Rivers Expected to Overflow	Lines Expected to Be Significantly Affected			
	Joetsu Shinkansen	Keihin-Tohoku Line	Utsunomiya Line	Joban Line
Arakawa River (upstream)	Tohoku Shinkansen	Saijo Line	Kawagoe Line	Sobu Line
Climate Change Scenarios	Flood Control Measures (Physical Facilities and Human Responses)	Increase in Financial Impact (Loss) (Billions of yen)		
		FY2051	FY2022-2051, Cumulative Total	
RCP2.6 (2°C increase)	No countermeasures	+3.0	+45.0	
	With countermeasures	+1.2	+17.7	
	Loss reduction effects of countermeasures	(1.8)	(27.3)	
RCP8.5 (4°C increase)	No countermeasures	+3.0	+45.5	
	With countermeasures	+1.2	+18.9	
	Loss reduction effects of countermeasures	(1.8)	(26.6)	



Estimated Financial Impact for Flooding of the Tonegawa River

Estimated Financial Impact for Flooding of the Tonegawa River			
Rivers Expected to Overflow	Lines Expected to Be Significantly Affected		
Tonegawa River	Tohoku Shinkansen	Joban Line	
Climate Change Scenarios	Flood Control Measures (Physical Facilities and Human Responses)	Increase in Financial Impact (Loss) (Billions of yen)	
		FY2051	FY2022-2051, Cumulative Total
RCP2.6 (2°C increase)	No countermeasures	+0.3	+4.1
	With countermeasures	+0.3	+3.9
	Loss reduction effects of countermeasures	0.0	(0.2)
RCP8.5 (4°C increase)	No countermeasures	+0.3	+4.5
	With countermeasures	+0.3	+4.2
	Loss reduction effects of countermeasures	0.0	(0.3)



4-25 Source : JR East Group Report https://www.jreast.co.jp/e/environment/pdf_2022/all.pdf

The business impact assessment assumes the introduction of the carbon pricing and conducts a quantitative analysis with reference to the 2030 carbon price

- ✓ **quantitatively assessed certain risks and opportunities business impact** as a financial burden in a decarbonized society
- ✓ **Disclosed financial impact estimates** based on carbon prices as of 2030

KH Neochem's Climate Change-Related Risks and Opportunities

Risks and opportunities with an extremely high potential impact on KH Neochem

Category	Risks/Opportunities		Key Countermeasures
Physical risks (4°C warming scenario)	Impact on operations due to abnormal weather	There is a risk of an increasing impact on operations from increasingly frequent abnormal weather events resulting from climate change, such as high tides, heavy rain, floods, and typhoons.	• Conducting drills to increase understanding and improve effectiveness of BCM/BCPs
	Introduction of carbon pricing	There is a risk of an increasing financial burden from the introduction of carbon taxes and other carbon pricing. Assuming CO ₂ emissions on the same level as 2021 (approx. 422 kt) and a carbon tax of 130 USD/ton in 2030 (1 USD = 130 yen), the financial burden could increase by 7.13 bn yen per year.	• Promoting energy-saving and the introduction of new technologies to achieve carbon neutrality by 2050 • Achieving the target of reducing greenhouse gas emissions by 30% by 2030 (compared to 2017) • Using CO ₂ as a raw material for products
Transition risks (1.5°C warming scenario)	Problems procuring certain raw materials	There is a risk to the procurement of raw materials from oil refineries as oil refiners reduce the number of refineries in response to decarbonization trends.	• Promoting purchasing from multiple suppliers
	Impact of switching to raw materials obtained from biomass	There is a risk of quality problems and increased procurement costs due to switching from oil-based to biomass-based raw materials.	• Maintaining and improving quality assurance
	Delayed response to ESG investment	There is a risk of divestments and falling share prices due to increasing criticism received for using large quantities of fossil fuels.	• Promoting energy-saving and the introduction of new technologies to achieve carbon neutrality by 2050 • Achieving the target of reducing greenhouse gas emissions by 30% by 2030 (compared to 2017)
Opportunities (4°C warming scenario)	Increased need for adaptive products	There is a possibility that the increasingly negative effects of climate change will cause rising demand for products that can mitigate those effects (such as heat stroke) and help people adapt to climate change.	• Supplying more refrigeration lubricant raw materials, which are indispensable for heat stroke-preventing air conditioners
Opportunities (1.5°C warming scenario)	Increased need for decarbonizing products	As people become increasingly environmentally conscious, there is a possibility of rising demand for products with a smaller carbon footprint.	• As the transition toward environmentally friendly air conditioners accelerates across the world, expanding the provision of refrigeration lubricant raw materials compatible with the refrigerants used in such air conditioners • Using CO ₂ as a raw material for products

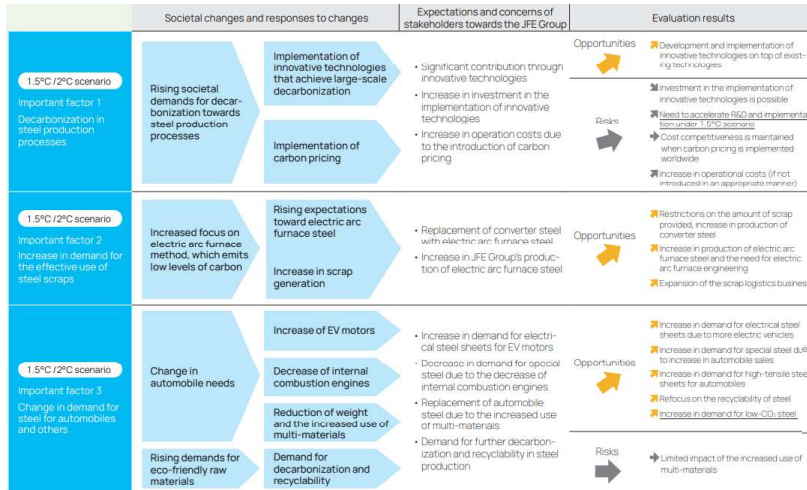
4-26 Source : KH Neochem Co., Ltd. "KH Neochem Report 2022" (https://www.khneochem.co.jp/en/csr/pdf/khneochem_report_2022_en.pdf)

【Domestic Disclosure Examples : JFE Holdings, Inc. (Materials, Building)】

3 4 5

Upgrading of the scenario analysis is undertaken by expanding the scope to include a 1.5°C scenario in FY2022, since the project potentially has a significant impact on climate change

- ✓ Analysis based on the International Energy Agency scenarios and assuming the introduction of a common carbon price for all major emitting countries
- ✓ For long-term scenario analysis, **risk assessment is conducted in considering the need for ultra-innovative technologies for the 1.5°C scenario (IPCC 1.5°C Special Report)** as well as the achievement of the 2°C scenario in steel production



Under the 1.5°C scenario, the analysis added the need for research and development to achieve carbon neutrality in 2050 and to speed up the implementation process

An assessment of the increased demand for low-CO₂ steel products was added

FOCUS Key Factors (1) Decarbonization of steel processes

- Considering the 1.5°C scenario, in order to maintain a financial base that can withstand the huge R&D and capital investment costs associated with the introduction of ultra-innovative technologies and to advance decarbonization efforts, promoting government support and collaboration with society, including Transition Bonds and endorsement of the GX League Basic Concept is underway

2050
International expectations have been rising for organizations to seek pathways for achieving the 1.5°C scenario. We believe the necessary actions are not significantly different from the 2°C scenario. In the 1.5°C scenario, however, the development and implementation of decarbonizing technologies would need to further accelerate, requiring significantly more R&D costs and capital investment. A social infrastructure capable of supplying cheap and ample green hydrogen and electricity would also need to be in place. We believe that addressing these issues will require more support from the government and collaboration across society, including a mechanism for broadly sharing the financial burden across society and a long-term strategy by the government for supplying green hydrogen and electricity. The JFE Group has been actively advancing decarbonization initiatives, including commissioning NEDO's Green Innovation Fund project¹, issuing transition bonds², and endorsing the GX League Basic Concept³.

4-27 Source : JFE IHP ([Scenario Analysis in Line with the TCFD Recommendations | JFE Holdings, Inc. \(jfe-holdings.co.jp\)](#)), GROUP REPORT 2022 JFE GROUP REPORT 2022 ([jfe-holdings.co.jp](#))

【Domestic Disclosure Examples: TODA CORPORATION (Materials, Building, 1/3)】

3 4 5

While presenting a qualitative worldview, the key parameters used in the scenario analysis are also disclosed

- ✓ **Disclosed the qualitative worldview of the less than 2°C (1.5°C) and 4°C scenarios and the parameters used in the scenario analysis**

Scenario Analysis Results

Outline of Envisioned Future Society

Under 2°C (1.5°C) Scenario (SDS scenario, etc.)

- Further increase in construction investment in renewable energy, including floating offshore wind power generation
- As ZEB becomes more widespread, competition for orders based on ZEB technology, design, and construction results intensifies
- Increases in carbon prices affect construction investment contraction

4°C Scenario (RCP8.5 scenarios, etc.)

- Decreased labor productivity during the summer months, resulting in longer construction periods, lower profit margins, and increased health risks for workers
- Increased physical risks in the real estate business due to increasingly severe extreme weather events
- Increased infrastructure investment in disaster prevention and mitigation work due to the emergence of physical risks and heightened awareness of response measures

Key Parameters Used in the Scenario Analyses

		Present	2030		Remarks / Sources
			4°C world	Under 2°C (1.5°C) world	
Carbon price	Carbon tax	289 yen/ton CO ₂	40 dollars	130 dollars	IEA WEO 2021 (average of current policy scenarios, and values for developed countries under the 2050 zero emissions scenario)
Deterioration of construction conditions	Decreased labor productivity rate due to heat stress	0.4%	>0.99%	0.99%	ILO Working on a warmer planet
	Number of heat stroke victims transported to hospitals	1 time	1.4 times	1.26 times	Climate Change Adaptation Information Platform (A-PLAT)
Energy saving in buildings	ZEB targets	—	ZEB-level energy efficiency performance required for new buildings	ZEB-level energy efficiency performance required for new buildings	Study Group on Energy Efficiency Measures, etc. in Housing and Buildings toward a Decarbonized Society (MLIT, METI, MOE)
	Energy demand for buildings	3.7 EJ	3.6 EJ	3.4 EJ	IEA WEO 2021
Expansion of renewable energy sources	Solar and wind power generation (excluding roof-mounted)	45.5 GW	76.6 GW	111.2 GW	Outlook for Energy Supply and Demand in FY2030 (Agency for Natural Resources and Energy)
	Floating offshore wind power generation	—	<10 GW	10 GW	Floating offshore wind power industry vision (Stage 1) 2040: 30–45 GW
Increasingly severe extreme weather events	Damage to cities caused by flooding	200 billion yen	260 billion yen	220 billion yen	Estimated based on data from the National Institute for Land and Infrastructure Management

4-28 Source : TODA CORPORATION "Corporate Report 2022" (https://www.toda.co.jp/english/sustainability/images/csr/cr22_en.pdf)

[Domestic Disclosure Examples: TODA CORPORATION (Materials, Building, 2/3)]

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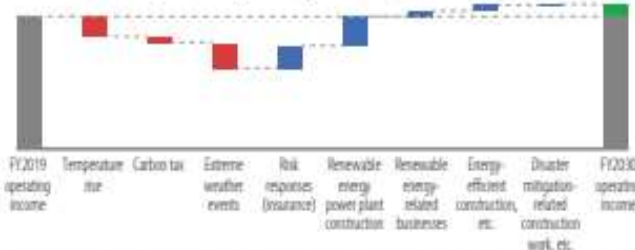
Illustrated the impact on the operating profit as a waterfall chart and reviews the scenario analysis annually

- ✓ Disclosed 2030 less than 2°C and 4°C scenario's risk and opportunities effects on the operating profit as a waterfall chart
- ✓ Reviews the results of scenario analysis each year and integrates them with strategy

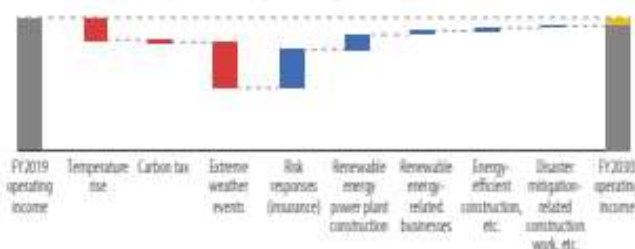
Financial Impact Assessment for 2030

Our assessment of the impact on operating income for fiscal 2030 shows that the increase in profits related to renewable energy is larger in the less-than 2°C (1.5°C) scenario than in the 4°C scenario, resulting in an increase in operating income. Our first assessment of the impact on operating income for the year 2030 was conducted in 2020. Since then, we have reviewed the results of our scenario analysis annually, but no significant changes have taken place in our assessment of the financial impact of our risks and opportunities, so the waterfall diagram on the right has remained unchanged. The results of the scenario analysis and financial impact assessment have been integrated into our strategy. (See p. 14)

Assessment of Impact on Operating Income (2030 Less than 2°C Scenario)



Assessment of Impact on Operating Income (2030 4°C Scenario)



4-29 Source: TODA CORPORATION "Corporate Report 2022" (https://www.toda.co.jp/english/sustainability/images/csr/cr22_en.pdf)

[Domestic Disclosure Examples: TODA CORPORATION (Materials, Building, 3/3)]

3 4 5

Reflect climate risks and opportunities in strategic and financial planning. Developed and disclosed a roadmap for 2050 carbon neutrality

Risk / Opportunity category	Major items		Time axis	Examination of risks and opportunities	Measures to responses to risks and opportunities	Affected businesses, strategies, financial plans, etc.	Areas of impact on strategy
Risks	Physical	Chronic	Temperature rise	Medium/Long	● Decreased work productivity and increased health risks for workers during rising temperatures	● Promotion of construction labor conservation and automation	● Supply chain / Value chain
	Transition	New regulations	Changing client needs	Short/ Medium/Long	● Risk of lost order opportunities due to inability to make technical proposals for low-carbon construction	● Introduction of climate management devices for workers	● Adaptation and mitigation activities
			Carbon price	Medium/Long	● Reduced construction investment and increased construction costs due to higher carbon pricing	● Promotion of identification and procurement of low-carbon products	● Supply chain / Value chain
			Energy-saving construction	Short/ Medium/Long	● Increase in sales from the proliferation of ZEB	● Promotion of low-carbon construction through TO-MINICA	● Adaptation and mitigation activities
Opportunities	Products / Services					Completed ZEB buildings in FY 2021: 3 "ZEB" Tsubuka Research and Development Center Green Office Building ZEB Road View Yamatokōda City New Town Hall, Kaifu Gakuen New Science Building	● Supply chain / Value chain
	Market	Changes in the energy mix	Short/ Medium/Long	● Increase in construction investment in solar and offshore wind power plants, etc.	● Construction of renewable energy power plants and concentration of resources on renewable energy projects	● Products / Services	
		Construction of flood control measures	Medium/Long	● Increase in infrastructure investment relating to flood control	● Expansion of offshore wind power generation plants	● Building a track record in power generation through floating offshore wind power	● Adaptation and mitigation activities
				Medium/Long	● Increase in infrastructure investment relating to flood control	● Concentration of resources and development of construction technology in floating offshore wind power generation	● Products / Services
					● Concentration of resources on construction work for disaster prevention	● Products / Services	
					● Promotion of low-carbon construction through TO-MINICA	● Products / Services	
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					● Promotion of low-carbon construction through TO-MIN		

To address risks and opportunities, the Group developed a roadmap to become carbon neutral in 2050 and disclosed it newly this fiscal year

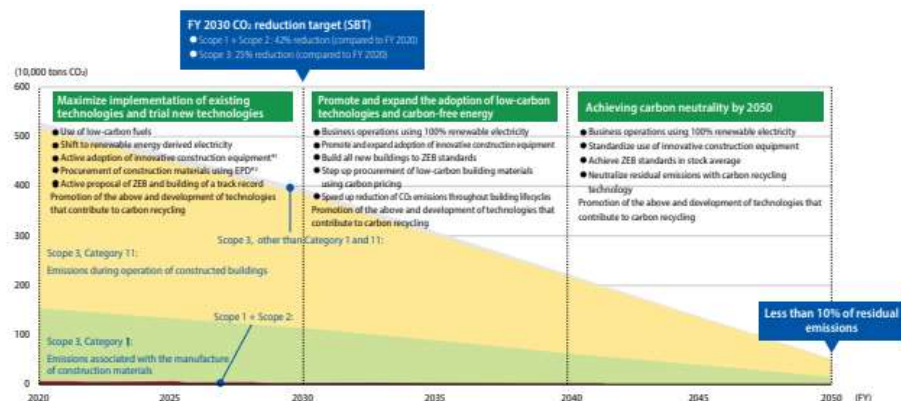
The roadmap consists of three phases:

- Maximize implementation of existing technologies and trial new technologies
- Promote and expand the adoption of low-carbon technologies and carbon-free energy
- Achieving carbon neutrality by 2050

Action Plan Summary

Our efforts to reduce greenhouse gas emissions will focus on the following four activities.

- 1 Reduce emissions associated with the use of diesel oil in construction equipment (Scope 1)
- 2 Promote procurement and use of renewable electricity (Scope 2)
- 3 Promote procurement of low-carbon materials (Scope 3, Category 1)
- 4 Expand construction of ZEB and energy-efficient buildings (Scope 3, Category 11)



*1 Construction equipment using radically redesigned power sources (electric, hydrogen, biofuels, etc.)

*2 Environmental Product Declaration: A mechanism for disclosing information on the environmental impact of a product over its lifecycle.

4-30 Source: TODA CORPORATION "Corporate Report 2022" (https://www.toda.co.jp/english/sustainability/images/csr/cr22_en.pdf)

【Domestic Disclosure Examples : LIXIL Corporation (Materials, Building, 1/2)】

3 4 5

For significant risks and opportunities, impacts are presented qualitatively, and calculations are provided

- ✓ The impact on operating costs, the impact on damage to own plants, and the impact on demand for energy-saving products and services are partially calculated quantitatively as the financial impact for 2030.

Risk/opportunity category		Risk/opportunity category	Impacted stage of value chain	Time horizon	Estimated financial impact		
					1.5°C scenario	4°C scenario	
RISKS	1	Increased operating costs due to introduction of carbon taxes	Policy and Legal, Technology	Direct operations	Medium to long	10 billion yen*1	No additional tax burden
	2	Increased raw material and component procurement costs due to market changes	Policy and Legal, Technology, Market	Direct operations, Upstream	Medium to long	Financial impact not calculated due to lack of parameters necessary for quantification	
	3	Loss of revenue opportunities due to damage to the company's plants caused by typhoons, floods, etc.	Physical (acute)	Direct operations	Short to long	1.5 billion yen*2	
OPPORTUNITIES	4	Increased demand for energy-saving products and services for new ZEH construction and energy-efficiency remodeling	Products and Services, Market, Energy Source	Downstream	Medium to long	20 billion yen*3	Maintain current trends
	5	Increased demand for products that use low-carbon, eco-conscious materials or resources	Products and Services, Markets, Resource Efficiency	Downstream	Medium to long	Financial impact not calculated due to lack of parameters necessary for quantification	
	6	Increased demand for products related to disaster preparation, response, and recovery	Products and Services, Markets, Resilience	Downstream	Short to long	Financial impact not calculated due to lack of parameters necessary for quantification	

1 Financial impact calculation is based on the assumption that a carbon tax (using IEA's estimates of carbon prices considered necessary to achieve the 1.5°C target) is imposed on Scope 1 and 2 carbon emissions.

2 Average loss is calculated based on the following steps: (1) identified any production sites with flood risks (based solely on production site location; risk mitigation measures set forth in our business continuity plans (BCP) are not incorporated), using the World Resources Institute's (WRI) Aqueduct Floods tool and hazard maps provided by Japanese municipalities; and (2) multiplied two factors: the number of days of stalled operations for sites in each inundation height zone indicated in Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) Manual for Economic Evaluation of Flood Control Investment; and the daily production volume of each site.

3 Profit is calculated based on the share, price, and profit margin of key products. This calculation assumes an increased ZEH percentage of new and existing housing in 2030 to achieve the Japanese government's 66% reduction target for the residential sector by 2030.

IEA, WRI (Aqueduct Floods), and information from the Japanese government is used as a basis for the calculations

4-31

Source: LIXIL Corporation "Disclosures based on the TCFD Recommendation"

(https://www.lixil.com/en/sustainability/environment/pdf/Disclosures_Based_on_the_TCFD_Recommendations_ENG.pdf)

【Domestic Disclosure Examples : LIXIL Corporation (Materials, Building, 2/2)】

3 4 5

Demonstrates resilience by reflecting the results of the analysis

- ✓ Responding to risks and opportunities identified through scenario analysis is reflected in the environmental strategy

By integrating our responses to risks and opportunities identified by the scenario analysis into our environmental strategy, we are working to mitigate risks, achieve sustainable growth, and enhance our resilience as an enterprise.

More specifically, we have set out to improve the profitability of our Japanese business, which is one of our strategic initiatives in the LIXIL Playbook, and help decarbonize housing through performance enhancements. To do this, we are reorganizing our production systems to reduce fixed costs and switch to platform-based products, adjusting sales prices to increase productivity, and profitability of our Japanese business, and rapidly launching new products, such as a revamped window lineup. Moreover, we are seeking to achieve sustainable growth by continually working on structural reforms and transforming into a more agile organization that responds flexibly to external changes, and by expanding our renovation business. In the fiscal year ended March 2022, we completed the transition to platform-based products for the housing technology business and finished revamping all window-series products.

1	Increased operating costs due to introduction of carbon taxes	<p>To reduce CO₂ emissions from our business sites (especially manufacturing sites), we are working to improve production efficiency, defect rates, and combustion efficiency and upgrade to equipment that meets Japan's Top Runner energy efficiency standards. We are also installing solar photovoltaic systems and increasing procurement of renewable energy when financially feasible.</p> <p>In the future, we will optimize renewable energy procurement methods based on trends such as carbon pricing and green electricity certificate prices, examine the introduction of more effective internal carbon pricing to pursue strategic energy conservation investments over the medium- to long-term, and develop manufacturing technologies and product materials to promote the development and introduction of decarbonization technologies in the long term.</p> <p>For more information: Climate Change Mitigation and Adaptation > Business Operations: Promoting Energy Generation and Saving ☞</p>
	4 Increased demand for energy-saving products and services for new ZEH construction and energy-efficiency remodeling	<p>The energy consumed from building products sector accounts for about 30% of final energy consumption worldwide. In Japan, heating, cooling, and hot water account for about 60% of the energy consumed by the average home. Housing performance in Japan lags behind that of other regions such as Europe, with around 90% of existing homes in Japan failing to meet current national energy-efficiency standards. High-insulation windows have an important role to play in driving improvements that mitigate global warming.</p> <p>As a company that supplies products and services that contribute to reductions in carbon emissions through their high thermal and water efficiency or energy generation capabilities, LIXIL recognizes it has a major responsibility to reduce carbon emissions from homes and buildings. High-performance renovation of existing homes is particularly important due to the shrinking market size for new houses in Japan. LIXIL will help stimulate home renovation through high-performance construction methods for insulating entire homes; easy-to-install, highly-insulating windows and doors; and energy and water-saving faucets, water-saving showers, toilets, and other products. And as a leader in window solutions, in fiscal year ending March 2023, we will revamp all window lineup in our effort to reach a 100% sales ratio of high-performance windows for newly constructed homes by fiscal year ending March 2026.</p> <p>For more information: Climate Change Mitigation and Adaptation > Products & Services: Conserving Energy and Reducing Greenhouse Gas Emissions ☞ High Efficiency Housing for a Decarbonized World ☞</p>

Describe the company's initiatives related to climate risks and opportunities, as well as future strategies and business strategies

(An excerpt)

4-32

Source: LIXIL Corporation "Disclosures based on the TCFD Recommendation"

(https://www.lixil.com/en/sustainability/environment/pdf/Disclosures_Based_on_the_TCFD_Recommendations_ENG.pdf)

[Example of Securities Report : Kameda Seika Co., Ltd. (Agriculture, Food, and Forest Products)] 3 4 5

In the definition of scenario groups, the external multiple scientific evidence and worldviews referenced are described. In the business impact assessment, disclose the amount of damage caused by physical risks

〈戦略〉

a. シナリオ分析

気候変動によるリスクおよび機会の特定にあたり、当グループにおける製品およびサービスの調達・生産・供給までのバリューチェーン全体を対象として、国際機関等が公表するシナリオをもとに4℃シナリオと2℃シナリオの2つの将来世界観を整理し、2030年時点における当グループへの影響を考察するとともに、それぞれの世界観におけるリスクと機会を特定しています。

4℃シナリオ、2℃シナリオにもとづく将来世界観

4℃シナリオ	2℃シナリオ
気候変動対策への取り組みは現行の政策や規制以上の進展がなく、化石燃料由来のエネルギーが継続的に使用されることによって温室効果ガス排出量が増大し、産業革命期頃と比較して、2100年頃までに地球平均気温が4℃以上上昇する将来予測。台風や豪雨をはじめとする異常気象の激甚化や、慢性的な気温上昇に伴う作物生育への悪影響といった、気候変動による直接的な被害が増加するのに対し、法規制や税制という形で市場への締め付けは強化されないため、移行リスクとしての影響度は小さい。	世界規模でのカーボンニュートラルの達成に向けて低炭素化が推進され、世界の平均気温が2℃程度の上昇に抑えられる将来予測。脱炭素化に向けた厳しい法規制や税制が施行され、温室効果ガスの排出量が抑制されることにより、気温上昇が抑制され異常気象等物理的リスクの規模や頻度は4℃シナリオに比べ縮小するものの、脱炭素化に向けた社会構造の変化に伴い、移行リスクは高まる。
(参考シナリオ) IPCC (気候変動に関する政府間パネル) : RCP8.5 IEA (国際エネルギー機関) : STEPS	(参考シナリオ) IPCC (気候変動に関する政府間パネル) : RCP2.6 IEA (国際エネルギー機関) : SDS/NZE2050

重要課題となり得るリスク項目の中で定量的な分析が可能な項目については、2030年時点における財務インパクトを推定し、4℃シナリオにおける「生産工場に対する物理的被害の拡大」および「プラスチック製包装資材の価格上昇」、2℃シナリオにおける「カーボンプライシングの導入によるコスト増加」が特に大きな影響を及ぼす可能性があることを確認しています。

なお、当グループの主原料である「米の収穫量および価格」の分析にあたり、外部機関が開示する将来予測パラメータでは、空気中の二酸化炭素濃度の上昇が米の生育に寄与するほか、気温上昇による生産地拡大などにより収穫量の増加および販売価格が低下すると予測されており、各将来予測シナリオにおける米価格予想、平均収量の推移、消費生産バランス等の要素から試算した結果、仕入れコスト減少の可能性を確認しています。

一方、水田の水温上昇などに伴い品質低下が見込まれていることから、こうした米を原料としながらもおいしい米菓を引き続きお客様にお届けできるよう、製品開発や社会貢献の可能性を模索するのが当グループの役割であり、既存の取り組みを継続・加速するとともに、新たな対応策の検討も推進していきます。

• References to external scientific evidence and worldviews for multiple scenarios

• **Quantitative impact is disclosed for the "expansion of physical damage to production plants" in the 4℃ scenario**
• Breakdown of damage amounts is provided, but **no basis for calculation is provided**



4-33 Source : Kameda Seika Co., Ltd., "Securities Report" (EDINET (edinet-fsa.go.jp))

[Domestic Disclosure Examples : Kirin Holdings Company, Limited (Agriculture, Food, and Forest Products)] 3 4 5

Based on the company's business characteristics, the financial impact of possible risks and opportunities is estimated qualitatively and partially quantitatively, and the results are disclosed

✓ **Assumed significant risks and opportunities as of 2030 and 2050 based on the company's strategy, business model, and supply chain characteristics, and estimated the financial impact qualitatively and partially quantitatively**

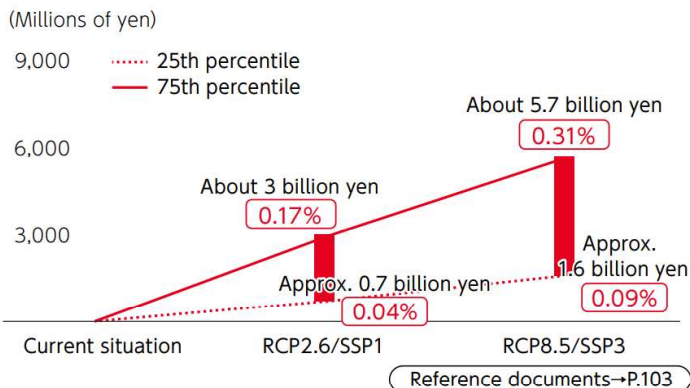
Financial impact on the procurement of agricultural products from carbon pricing [medium to long term]

The prices of agricultural products may spike if governments introduce carbon taxes and carbon border adjustment mechanisms.

Graph 14 shows the results of our estimation of the financial impact of carbon pricing on agricultural product prices. In 2022, we estimated the impact for Kirin Brewery, Kirin Beverage, Mercian, Lion (excluding the non-alcoholic beverages business), Kyowa Kirin, and Kyowa Hakkio Bio. Our estimates covered the following agricultural products: barley, hops, tea leaves, grape juice, starch, lactose, corn, and cassava.

In our estimates, we calculated that the impact would be approximately 0.7 billion yen to approximately 3.0 billion yen under the RCP2.6/SSP scenario and approximately 1.6 billion yen to 5.7 billion yen under the RCP8.5/SSP3 scenario in 2050. The range of the 25-75 percentile was 1.8 times larger for the RCP8.5/SSP3 scenario than the RCP2.6/SSP1 scenario, from which we can conclude that uncertainty is higher and the risk is more significant.

14 Impact on agricultural product procurement costs from carbon pricing in 2050 (percentage of revenue)



* The socioeconomic systems in the papers we used for our estimates differ from the Kirin Group scenarios, so we have created and disclosed our estimates under the RCP2.6/SSP1 and RCP8.5/SSP3 scenarios in these papers.

(Excerpts from the Risks and Opportunities section regarding the cost impact of carbon pricing)

4-34 Source : Kirin Holdings Company, Limited, "Environmental Report 2022" (Environmental Report 2022 (kirinholdings.com))

The business impact is assessed as “small, medium, or large”, according to the size of the amount, including time of onset and period of impact. Countermeasures are also disclosed

1.5°C scenario		
Details		
<p>Environmental regulations around the world are tightened to address climate change, and costs increase due to the following factors.</p> <ul style="list-style-type: none"> Introduction of carbon taxes, carbon border adjustment mechanisms (CBAM), emissions trading systems (ETS) and other schemes in countries where Group companies are located. Capital investment and depreciation of existing assets for reducing greenhouse gas emissions, including replacing gasoline, diesel, and other fossil fuels used in logistics vehicles and fossil fuels used for electricity and for boiler operation in certain production processes with renewable energy sources. 		
Time of onset	Duration of impacts	Impact level
Within 5 years	Longer than 10 years	4.2 billion yen ¹⁾

<p>Costs will increase and sales will decline due to the following risks associated with deforestation and loss of parkland in the supply chain of the Group's major raw materials (palm oil, cocoa, soybeans, shea kernel, etc.).</p> <ul style="list-style-type: none"> Increased cost associated with strengthening engagement with suppliers to ensure that deforestation and parkland loss, which increase atmospheric CO₂ concentrations and exacerbate climate change, do not occur. The spread of SDG values in society drives the introduction of stricter environmental regulations and increases public awareness of the need for action to conserve the environment. The Group faces criticism and damage to its reputation when deforestation and parkland loss occur in its supply chain, leading to the suspension of transactions from major customers. 		
Time of onset	Duration of impacts	Impact level
Within 5 years	Longer than 10 years	Medium

- ✓ Time of onset and period of impact for the period of impact are disclosed separately.

Not only is the degree of impact is disclosed quantitatively, the time of onset and duration of impact is shown as well

- ✓ Quantitative assessment based on 3 categories of risk impact

Small : Impact less than 2 billion yen
Medium : Impact of 2 billion yen or more to less than 10 billion yen
Large : Impact of 10 billion yen or more

- ✓ Detailed policy on risk response measures

Response approach	
<ul style="list-style-type: none"> Strengthen efforts to prevent or mitigate environmental risks in the supply chain based on the Group's sourcing policies For palm oil, we will improve traceability with the aim of achieving 100% traceability to palm oil mills and 100% traceability to plantations, as well as promote efforts that improve the supply chain with the aim of solving environmental problems at palm oil production sites (plantations), based on our medium- to long-term goals for sustainable procurement of palm oil. Our aim is to achieve No Deforestation, No Peatland Development, and No Exploitation (NDPE) as stated in the Group's Responsible Palm Oil Sourcing Policy. For cocoa, we will plant one million trees on cocoa-growing regions by 2030 to promote efforts that reduce the negative impact on forests, based on our medium- to long-term goals for sustainable procurement of cocoa. Our aim is to achieve sustainable cocoa procurement as stated in the Group's Responsible Cocoa Beans Sourcing Policy. For soybeans, we are working to achieve traceability to the community level, No Deforestation and No Exploitation, and 100% procurement of RTRS (Round Table on Responsible Soy Association)-certified products or products certified to equivalent standards. For shea kernels, we are working to plant 6,000 trees per year and achieve 75% traceability to the village level, with the goals of conserving forest and supporting women's empowerment. Supplier Code of Conduct We developed a Supplier Code of Conduct to serve as a high-level policy to existing guidelines and policies for communicating the Group's overall approach to procurement to all suppliers. The code urges suppliers to comply with a list of basic principles (e.g., environmental conservation) and to devise preventive and remedial measures for identifying code violations and making improvements. 	

Source: FUJI OIL HOLDINGS INC. website Risk Management System (<https://www.fujioilholdings.com/en/sustainability/risk/>)

4-35

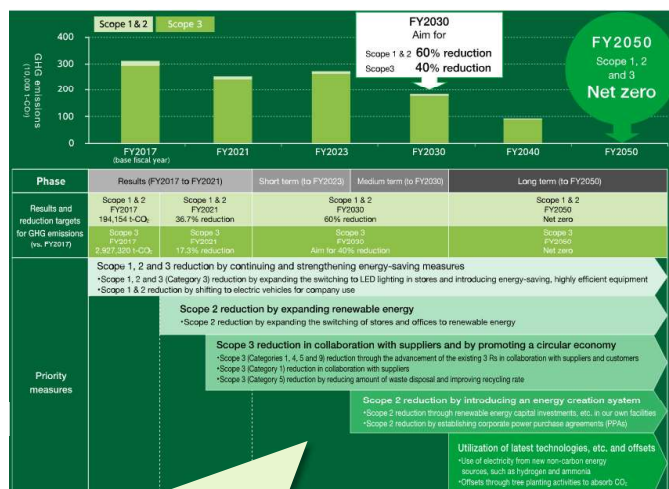
Qualitatively and Quantitatively listed the impact for each risk and opportunity, and the results of the analysis are reflected in the long-term business strategies to enhance resilience in all scenarios

- ✓ For 2 scenarios (1.5°C/less than 2 and 4°C scenario), the significant risks and opportunities in 2030 are disclosed quantitatively and for some qualitatively, with measures stated as well
- ✓ The qualitative analysis of the business impacts are shown in 3 different arrows depending on the degree of the financial impact

Climate-related risks and opportunities of particular importance to the Group		Financial impacts		Measures
		Below 1.5/2°C scenario	4°C scenario	
Risk	● Increase in energy cost associated with the introduction of policies to control GHG emissions, such as carbon taxes and the strengthening of regulations	Cost increase of approximately ¥1.1 billion ¹⁾	Cost increase of approximately ¥0.8 billion ¹⁾	● Reduction in Scope 1 and 2 emissions due to switching to energy saving and renewable energy at stores and business sites
	● Increase in cost of reducing GHG emissions by purchasing green electricity certificates and on-site electricity	Cost increase of approximately ¥0.2 billion ²⁾	Cost increase of approximately ¥0.2 billion ²⁾	● Reduction in energy usage due to introduction of latest high energy-efficiency equipment at stores and business sites
	● Increase in renewable energy procurement cost due to increase in use of renewable energy sources	Cost increase of approximately ¥0.2 billion ³⁾	Cost increase of approximately ¥0.2 billion ³⁾	● In-house generation and consumption of renewable energy through introduction of energy creation system, such as capital investment in renewable energy at in-house facilities
	● Reduction in earnings due to damage to stores and business sites and suspension of operations because of natural disasters caused by climate change	Cost decrease of approximately ¥0.2 billion ¹⁾	Cost decrease of approximately ¥0.2 billion ¹⁾	● Increased resilience of stores and business sites through the development of BCP
Opportunity	● Loss of sales opportunities in stores due to increased risk of infectious diseases (COVID-19, etc.) caused by climate change	Cost decrease of approximately ¥0.2 billion ²⁾	Cost decrease of approximately ¥0.2 billion ²⁾	● Diversification of sales channels through the promotion of Real Estate Strategy formulated in the Medium-term Business Plan
	● Decrease in energy procurement cost due to introduction of the latest high energy-efficiency equipment	Sales increase of approximately ¥1.0 billion ⁴⁾	—	● Reduction in energy usage due to introduction of latest high energy-efficiency equipment at stores and business sites
	● Expansion of earnings due to opening of environmentally conscious tourist stores following conversion to stores and business sites with high environmental value	—	—	● Acquisition of environmental certification for stores and business sites through energy saving and switching to renewable energy
	● Expansion of earnings due to response to an increase of demand for sharing and apparel products in collaboration with suppliers	—	—	● Conversion to a circular business model, including sharing and recycling in collaboration with suppliers
Opportunity	● Expansion of earnings due to response to an increase of customer demand for environmental products and services, such as reusable and recycled products	—	—	● Increase in life of S&P in collaboration with customers and suppliers and expansion of handling of environmental products and services
	● Capture of new growth opportunities by response to increased infectious disease risk (COVID-19, etc.) caused by climate change	—	—	● Diversification of sales channels through the promotion of Real Estate Strategy formulated in the Medium-term Business Plan

- ↑ The impact on the Group's business and finance is expected to be very large.
- ↑ The impact on the Group's business and finance is expected to be slightly large.
- ↑ The impact on the Group's business and finance is expected to be negligible.

- ✓ To increase resilience, the results of the scenario analysis is integrated into the long-term strategy



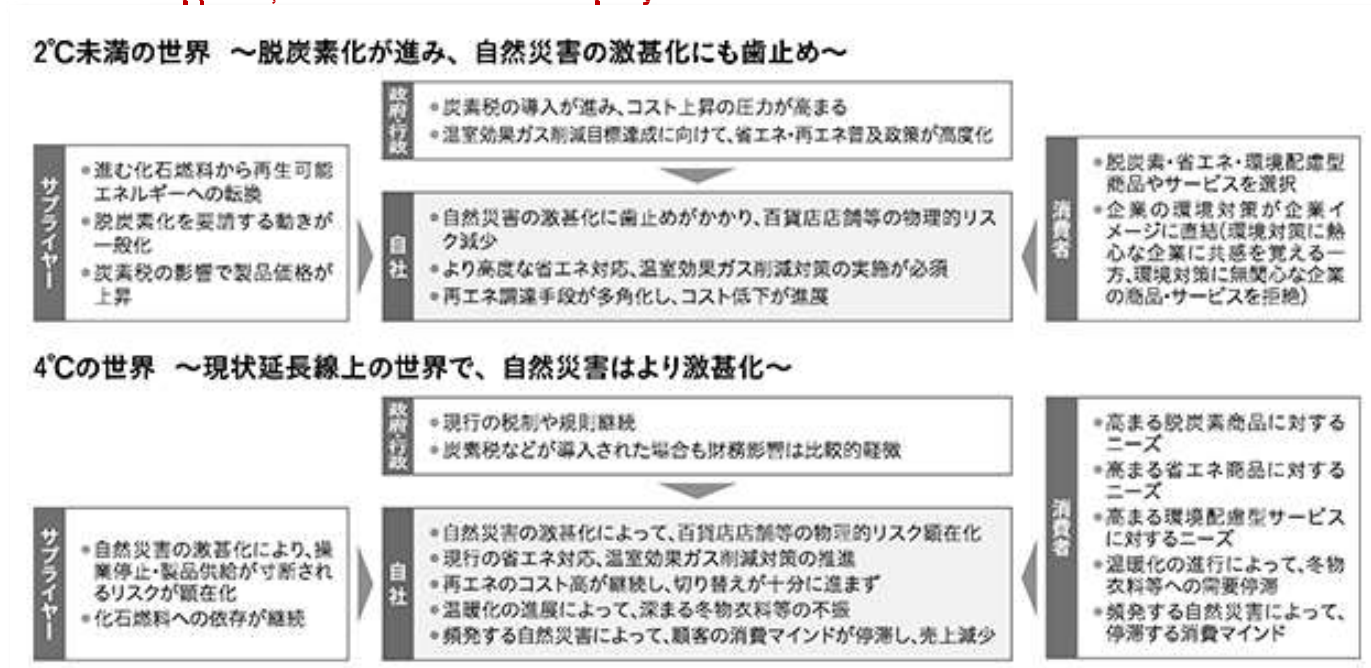
- Believes it is necessary to strengthen its highly strategic resilience from a medium- to long-term perspective under the 2 scenarios to realize net zero in 2050. Thus, the Group has formulated a transition plan for realizing net zero in FY2050.
- To achieve the 2030 and 2050 targets, energy conservation, renewable energy expansion, promotion of circular economy, energy creation system, use of new technologies are planned

4-36

Source: J. Front Retailing Co., Ltd. "Information Disclosure in line with TCFD Recommendations" (<https://www.j-front-retailing.com/english/sustainability/low-carbon/low-carbon06.html>)

A detailed worldview of the impact on the company in each scenario with relationships with government and administration, suppliers, and consumers are disclosed

- ✓ Based on external scenarios, changes in the external environment in a world of less than 2°C/4°C are summarized using the **relationship between government/administration, suppliers, consumers and the company**



4-37 Source: Isetan Mitsukoshi Holdings “Securities Report” [EDINET \(edinet-fsa.go.jp\)](https://www.edinet-fsa.go.jp/EDINET)

Evaluated the business environment perception of transition risks and opportunities on a 7-point scale, and disclosed specific policies and initiatives, which is factored into the strategy as well

- ✓ For the 8 monitored businesses that are impacted by climate change, **transition risks and opportunities in the 1.5°C scenario is incorporated in developing business strategies to optimize portfolios**

○ Copper

Demand Outlook	2°C Scenario (SDS)*1							1.5°C Scenario (NZE)*2						
	Significant decrease	Decrease	Slight decrease	Flat	Slight increase	Increase	Significant increase	Significant decrease	Decrease	Slight decrease	Flat	Slight increase	Increase	Significant increase
Awareness of the Business Environment	Under the 2°C scenario, Electric Vehicles (EV) (including hybrids), which emit less CO ₂ , and renewable energy generation, mainly wind and solar power, are expected to become more widespread worldwide. Demand for copper is expected to increase by 40% in 2040 compared to 2020 (the STEPS scenario: 32% increase) due to the greater use of highly conductive copper in EVs compared to Internal Combustion Engine vehicles (ICEV), as well as the increase in power generation and associated transmission and distribution networks that are essential for accelerating electrification. On the supply side, copper supply against demand is expected to be tight in the future due to difficulty in expansion and new development at mines.							Under the 1.5°C scenario, the need to further reduce CO ₂ emissions will accelerate the spread of EVs (including hybrids) and renewable power generation, especially wind and solar. As a result, copper demand is expected to increase even further compared to the 2°C scenario; about 60% in 2040 compared to 2020. While there are many mines and projects that are difficult to expand or newly develop, copper demand is expected to grow more rapidly than under the 2°C scenario, further tightening the balance of copper supply and demand.						
Policies and Initiatives Based on the Awareness of the Business Environment														
Under both the 2°C and the 1.5°C scenarios, copper demand is expected to increase steadily due to the widespread use of EVs (including hybrids) and renewable power generation, and the associated development of power transmission and distribution networks, while copper supply and demand is expected to tighten due to the increasing difficulty of developing new copper projects. MC is currently participating in copper mining projects in Chile and Peru, and have a production capacity of 200,000-250,000 tons per year. MC plan to start production at Quellaveco mine in FY2022, which is currently under development, and our equity production is expected to increase by 120,000 tons per year, i.e., to 300,000 tons per year. We will continue to position the copper business as the core of our metal resources business, along with high quality metallurgical coal, and strive to increase the value of our existing assets, while at the same time considering opportunities to develop new competitive projects, in order to fulfill our responsibility to provide a stable supply of copper to customers. In addition, as a measure to reduce environmental impact, we will promote initiatives such as switching to renewable energy sources for electricity used in operations at the copper mines in which we have invested. At the same time, we will closely monitor trends in new technologies that will improve the recovery rate of copper resources for the effective use of resources.														

*1 Demand in the 2°C scenario is calculated based on data from IEA Role of Critical Minerals in Clean Energy Transitions.

*2 Demand in the 1.5°C scenario is estimated from data in IEA Role of Critical Minerals in Clean Energy Transitions and IEA Net Zero by 2050.

Thermal coal has been excluded from this analysis, given that MC sold all of its thermal coal interests as the result of a review conducted from the perspective of strengthening its business portfolio.

3) Incorporation into Business Strategy

For the eight businesses selected for monitoring (for both transition risks and opportunities) mentioned above, the results of the transition risk/opportunity analysis for each business, assuming the 1.5°C scenario as a decarbonization scenario, are incorporated into strategy when each business group formulates its own business strategy, for the purpose of optimizing our portfolio.

4-38 Source: Mitsubishi Corporation Website (<https://mitsubishicorp.disclosure.site/en/themes/161#b-915-2>)

[Domestic Disclosure Example: NTT DATA Corporation (Electricity, Machinery, Communication, 1/2)]

Business and financial impact are qualitatively and quantitatively described with calculations basis being disclosed

3 4 5

Climate-Related Risks and Opportunities

Risks and Opportunities	Type	Outline	Time Horizon	Likelihood of Occurrence	Degree of Impact	Our Approach to Financial Impact	Financial Impact	Our Approach to Countermeasures	Countermeasures Costs (FY2022-25; cumulative)	
Risk 1	Loss of reputation due to delayed responses	Transitional risk (Reputation)	Any delay in responding to investor requests for ESG information disclosure could lead to loss of reputation and a decline in share price.	Short term	Virtually certain	High	Delays in responding to climate change will result in lower evaluation by foreign ESG investors and domestic financial institutions. Our calculation is based on a 1% decline in market capitalization due to lower valuations from foreign investors and domestic financial institutions.	Market capitalization -¥34 billion	Establish the Green Innovation Office ¹⁾ as a dedicated organization to accelerate the NTT DATA Group's response to decarbonization and greening of clients and society through the supply chain; engage in activities spearheaded by the Climate Action Committee.	¥5 billion
Risk 2	Data center shutdown due to abnormal weather	Physical risk (Acute)	Large typhoons, floods, heat waves, torrential rains, and other abnormal weather events increase the risk of data center operational shutdown due to power outages, flooding, and lightning strikes.	Short term	Virtually certain	Medium-high	We have locations in high-risk areas cited in the IPCC's Sixth Assessment Report and have taken various measures, including the creation of hazard maps, to ensure business continuity. Our calculation of impact on net sales is based on a five-day shutdown of major data centers located mainly in the Tokyo metropolitan area.	Net sales -¥13 billion	Maximize BCP for data centers, offices, telecommunications, etc.; allocate expenses for enhancing and renewing data centers, remote access, and maintenance environments, etc.	¥8 billion
Risk 3	Increase in costs due to carbon pricing (e.g., carbon tax)	Transitional risk (Regulatory)	To comply with the Paris Agreement, domestic regulations will be significantly tightened and the cost burden for CO ₂ emissions will increase.	Long term	Virtually certain	Medium-high	The consensus across global society is that net-zero emissions must be achieved by 2050, and companies are facing growing calls to comply with corresponding laws and regulations. We calculate the estimated cost impact by multiplying remaining emissions (FY2022-2040) by the carbon price under the IEA's Net-Zero Emissions by 2050 Scenario. Note: FY2022-2040: -¥70 billion (cumulative).	FY2022-2025 -¥7 billion	Reduce carbon emissions through energy conservation and introduce renewable energy to decarbonize our own supply chain	¥5 billion

- ✓ For the business impact assessment, description of financial impact as well as the basis for calculation are qualitatively disclosed

(Selective excerpt)

- ✓ Each risk and opportunities business and financial impact are qualitatively described and supplemented with quantitative information

Risk 1: Loss of reputation due to delayed responses		Time horizon: Short term
Delays in responding to increasing requests for ESG information disclosure from investors might result in a loss of reputation and a consequent decline in our share price, as well as deterioration in fundraising conditions.		
Assumed business and financial impacts	<p>There is increasing demand among investors for companies to disclose information related to climate change. If there is a delay in responding to such demand or our efforts to reduce GHG emissions are deemed insufficient, we face the risk of a falling reputation among investors, which might lead to declines in our stock price and deteriorating conditions for raising funds in the capital market.</p> <p>Foreign corporations account for 17.52% (as of March 31, 2022) of our share ownership, and foreign investors tend to be more active in ESG investing than Japanese domestic investors. Therefore, a decline in foreign investors' valuation of the Company might lead to a decline in our stock price and a fall in our corporate value.</p> <p>In addition, Japanese financial institutions account for 20.92% (as of March 31, 2022) of our share ownership. Because financial institutions in Japan have started joining the Partnership for Carbon Accounting Financials (PCAF), there is a risk that the Company's corporate value might fall due to a decline in valuation by domestic financial institutions.</p> <p><u>If our stock price were to decline 1% due to a lower valuation by foreign investors and domestic financial institutions, we estimate that our market capitalization would decline by ¥34 billion*1 (fiscal year-end).</u></p>	

Source: NTT DATA Corporation "Sustainability Report Book 2022" (https://www.nttdata.com/global/en/-/media/nttdataglobal/1_files/sustainability/sustainability-report/2022/sr_2022.pdf?rev=8afe653122b346a38e3039a7e08f541c)

4-39

[Domestic Disclosure Example: NTT DATA Corporation (Electricity, Machinery, Communication, 2/2)]

Cost of the response measures and investment approach based on the business/financial impact are described for each response measures

3 4 5

Climate-Related Risks and Opportunities

Risks and Opportunities	Type	Outline	Time Horizon	Likelihood of Occurrence	Degree of Impact	Our Approach to Financial Impact	Financial Impact	Our Approach to Countermeasures	Countermeasure Costs (FY2022-25, cumulative)	
Risk 1	Loss of reputation due to delayed responses	Transitional risk (Reputation)	Any delay in responding to investor requests for ESG information disclosure could lead to loss of reputation and a decline in share price.	Short term	Virtually certain	High	Delays in responding to climate change will result in lower evaluation by foreign ESG investors and domestic financial institutions. Our calculation is based on a 1% decline in market capitalization due to lower valuations from foreign investors and domestic financial institutions.	Market capitalization -¥34 billion	Establish the Green Innovation Office** as a dedicated organization to accelerate the NTT DATA Group's response to decarbonization and greening of clients and society through the supply chain; engage in activities spearheaded by the Climate Action Committee.	¥5 billion
Risk 2	Data center shutdown due to abnormal weather	Physical risk (Acute)	Large typhoons, floods, heat waves, torrential rains, and other abnormal weather events increase the risk of data center operational shutdown due to power outages, flooding, and lightning strikes.	Short term	Virtually certain	Medium-high	We have locations in high-risk areas cited in the IPCC's Sixth Assessment Report and have taken various measures, including the creation of hazard maps, to ensure business continuity. Our calculation of impact on net sales is based on a five-day shutdown of major data centers located mainly in the Tokyo metropolitan area.	Net sales -¥13 billion	Maximize BCP for data centers, offices, telecommunications, etc.; allocate expenses for enhancing and renewing data centers, remote access, and maintenance environments, etc.	¥8 billion
Risk 3	Increase in costs due to carbon pricing (e.g., carbon tax)	Transitional risk (Regulatory)	To comply with the Paris Agreement, domestic regulations will be significantly tightened and the cost burden for CO ₂ emissions will increase.	Long term	Virtually certain	Medium-high	The consensus across global society is that net-zero emissions must be achieved by 2050, and companies are facing growing calls to comply with corresponding laws and regulations. We calculate the estimated cost impact by multiplying remaining emissions (FY2022-2040) by the carbon price under the IEA's Net-Zero Emissions by 2050 Scenario. Note: FY2022-2040: -¥70 billion (cumulative)	FY2022-2025 -¥7 billion	Reduce carbon emissions through energy conservation and introduce renewable energy to decarbonize our own supply chain	¥5 billion

- ✓ Not only are specific measures disclosed, estimated investment amounts and investment approach are quantitatively discussed

- ✓ Structure to promote response measures, current measures, and the cumulative investment needed from 2022-2025 are qualitatively and quantitatively supplemented

Measures and costs	
In addition to its existing Climate Action Committee, we have established the Green Innovation Office, a dedicated organization tasked with quickly responding to investor requests for climate-related information disclosure and accelerating efforts to reduce GHG emissions. In response to increasing disclosure requirements, the organization is streamlining the process of calculating and visualizing our GHG emissions and promoting action on climate change. In 2021, we spearheaded the launch of a GHG emissions visualization platform that covers a wide variety of emission intensity and logic based on our internal initiative. We have also started building an information dissemination infrastructure for distributed energy to achieve carbon neutrality in an initiative to support business and technology development. Our investments in climate-related innovations are aimed at creating technologies and business models that promote the decarbonization of society. They reflect our efforts to provide IT and consulting services related to climate change and thereby enhance our reputation for action on climate change.	(excerpt)
The Green Innovation Office will invest ¥4.1 billion-¥4.5 billion annually under our Medium-Term Management Plan (FY2022-2025) for the above activities, for a cumulative investment of ¥5 billion over four years (¥1 billion + ¥1 billion + ¥1.5 billion + ¥1.5 billion = ¥5 billion). These investments will go to green innovation projects selected internally, including construction of an information dissemination infrastructure for distributed energy, and are based on actual results in fiscal 2021 and budgeted amounts for fiscal 2022.	
We expect to allocate around 50% of such investments to developing services to help clients and society achieve net zero, and 50% to promote innovation for GHG emissions visualization and reduction actions aimed at achieving our own net-zero goal.	

Source: NTT DATA Corporation "Sustainability Report Book 2022" (https://www.nttdata.com/global/en/-/media/nttdataglobal/1_files/sustainability/sustainability-report/2022/sr_2022.pdf?rev=8afe653122b346a38e3039a7e08f541c)

4-40

Multiple scenario's world view are set up with reference to IEA and other scientific scenarios

- ✓ Two scenarios are set up with reference to IEA, WEO, IPCC
- ✓ For oil and gas market and semiconductor manufacturing market, **parameters are used to quantitatively analyze** the possible risks

- ✓ When qualitatively describing the worldview, the company has independently categorized and narratively the situation on **"policy," "customers," and "procurement"** based on its business model for each scenario

Major parameters used in transition risk analysis of business for the Oil and Gas Market

Items of high importance	Parameter	Present (around 2020)	In 2050		Major Sources
			4°C	1.5°C	
Carbon prices, national carbon emission targets and policies	Carbon price	Introduced in the EU	Limited introduction of carbon price	Carbon prices increase in all regions. \$5~250US\$/t CO2	IEA
	GHG emissions targets		Carbon neutral in major countries	Carbon neutral in major countries	Websites in various countries etc.
Changes in customer companies, governments, and markets	Petroleum consumption for chemical applications	596Mtoe	848Mtoe (2040)	790Mtoe (2040)	IEA
	Supply and demand for oil and natural gas	Oil: 87.9mb/d Natural gas: 4,000mb/d	Oil: 102.9mb/d Natural gas: 5,113mb/d	Oil: 24.01mb/d Natural gas: 1,747mb/d	IEA
	Power composition (from O&G)	Oil: 3% of total Gas: Fair ratio 22%	Oil: 1% of total Gas: 15% of total	Oil: 0% of total Gas: 0% composition	IEA
	Fossil-fuel-derived CO2 emissions in the power and industrial sectors where CCUS is used	Power Projects Division:3 GtCO2 Industrial sector:3 GtCO2	Power Projects Division:862 GtCO2 Industrial sector:992 GtCO2	Power Projects Division:862 GtCO2 Industrial sector:992 GtCO2	IEA
	Demand for ammonia			A process for decarbonization is required.	Various sources
	Power generation capacity (TW) of natural gas with CCS	No CCS: 2.32 CCS: 0.02		No CCS: 1.57 CCS: 0.27	IEA
	Chemical sector CO2 recovery (GtCO2)	0.0042		0.6754	IEA
	Energy consumption per GDP (global)	0.11toe/\$1,000PPP	0.040.02toe/\$1,000PPP	0.02toe/\$1,000PPP	IEA
	Costs for renewal of test equipment due to restrictions on alternative fluorocarbons			About twice as much as before	Our research

Referred to 1.5°C : NZE, RCP1.9, 4°C : STEPS, RCP6.0

Face-to-face market	Temperature scenario	Policy and Regulatory scenarios	Scenario for the customer	Procurement scenarios
Oil & Gas Market	4°C Scenario	Reinforcement of regulations is limited. ● Carbon taxes, border carbon taxes and emissions trading are negative. ● The energy-saving promotion policy will depend. ● Climate change adaptation-related subsidies may be established.	The same level of demand continues. ● The impact of the introduction of a carbon tax is small. ● Petroleum refining and petrochemicals are maintained to a certain extent. ● Disaster caused by forest fires, heavy rains, typhoons, hurricanes, floods, etc., and require service and support.	The supply continues to be the same as it is. ● The impact on procurement costs is small. ● Disaster caused by forest fires, cyclones, floods, etc., and supply is cut off.
	1.5°C Scenario	Regulations are strengthened. ● Carbon taxes and emissions trading are introduced. ● Enforcement of new regulations and existing regulations are strengthened. ● Subsidy policies are implemented for technologies that contribute to energy conservation and renewable energy.	The Oil and Gas Market evolves. ● Demand for petroleum refineries shrinks. ● Demand for LNG for power supplies shrinks. ● The demand for petrochemicals is maintained to a certain extent. ● Demand for energy-saving and highly efficient products increases. ● Demand for hydrogen and ammonia refining for the next generation energy increases in the medium term.	Raw material prices rise. ● The introduction of a carbon tax will increase the price of steel and other raw materials.

4-41 Source: Ebara Corporation (<https://www.ebara.co.jp/en/sustainability/think/information/tcdf.html>)

Demonstrates resilience to scenario analysis results and integrated the results with the business strategy

- ✓ Based on the results of the business impact assessment, this report describes the results of a review of measures to address risks and opportunities through 2050

Short-term: The period of our Medium-term Management Plan (3 years)
Medium-term: 2030 Long-term: 2050 years

Face-to-face market	Temperature scenario	Business environment scenario	Term	Major countermeasures: Common to 1.5 °C and 4°C Scenarios
Oil and Gas Market	4°C Scenario	Risk	Short to long term	Disclosed Resilience (selected excerpt) • We believe that the decline in profits resulting from sales decrease of conventional oil and gas-related products due to the evolution of the market can be fully offset by the following measures, and that an increase in profits of several 10 billion yen can be expected Integration with business strategy (selected excerpt) • We anticipate that the business field of conventional customers will evolve from the Oil and Gas Market to the next generation energy market, and that we can also expect to acquire new customers. This is reflected in our business strategies for products that respond to the progress of CCUS/CCS and hydrogen/ammonia power generation technologies, hydrogen production and storage technologies, products for geothermal and solar thermal power generation, and compressors for hydrogen liquefaction plants and hydrogen supply pipelines
		Opportunities	Medium to long term	
	1.5 °C Scenario	Risk	Medium to long term	
		Opportunities	Medium to long term	
Semiconductor Manufacturing Market	4°C Scenario	Risk	Short to long term	
		Opportunities	Short to medium term	
	1.5 °C Scenario	Risk	Short to long term	
		Opportunities	Medium to long term	

4-42 Source: Ebara Corporation (<https://www.ebara.co.jp/en/sustainability/think/information/tcdf.html>)

Future investment amount and impact on CAGR are qualitatively disclosed and initiatives to strengthen resilience are discussed

区分	評価項目	観在時期	事業インパクト	財務影響度
移行リスク	市場の変化・政策・法規制	短期	インパクト ・気候変動とペーパー需要の変化に関する強い関連性は見出せないが、印刷・情報用紙の需要は減少傾向にあると想定する。COVID-19 によるトレンド変化（分散化によるオフィス印刷の縮小など）によりペーパーレス化がさらに進んだ場合においても、インクジェット技術・紙再生技術に基づき商品・サービスの強化（印刷コスト低減、環境負荷低減、印刷の快速性向上、紙情報の有用性訴求）により財務影響へのインパクトは限定的と予想される	小
移行リスク	(環境ビジョン 2050の取り組み) ・脱炭素 ・資源循環 ・環境技術開発	短期	インパクト ・世界的に共通した社会課題である「気候変動」と「資源枯渇」に対し、商品・サービスやサプライチェーンの「脱炭素」と「資源循環」における先進的な取り組みが求められる ・飛躍的な環境負荷低減につながる環境技術開発により、科学的かつ具体的なソリューションが求められる リスクへの対応 ・脱炭素 ・再生可能エネルギー活用 ・設備の省エネ ・温室効果ガス除去 ・サプライヤーエンゲージメント ・脱炭素ロジスティクス ・資源循環 ・資源の有効活用 ・生産ロス極小化 ・商品の長期使用 ・環境技術開発 ・ドライファイバーテクノロジー応用 ・天然由来素材（脱プラ） ・原料リサイクル（金属、紙） ・CO ₂ 吸収技術	2030年までに合計約1,000億円を投入
物理リスク	急性 洪水による事業拠点の被災 慢性 海面上昇による事業拠点の被災 洪水による農産物の影響	長期 (21世紀末)	インパクト ・36 拠点（国内 17、海外 19）を対象に 2022 年度最新リスクを評価した結果、洪水（河川氾濫）、高潮、洪水によるエプソンに将来的な操業リスクの変化は限定的 ・サプライチェーンに関する短期気候変動リスクについては、BCP（事業継続計画）で対応	小
機会	(環境ビジョン 2050の取り組み) ・お客様のもとの環境負荷低減	短期	想定シナリオ ・炭素税導入、電気料金高騰、廃棄物処分コストの上昇、過剰生産・資源削減などにより、環境に配慮した商品・サービスへのニーズが高まる 事業機会 ・「Epson 25 Renewed」における成長領域として、①環境負荷低減・生産性向上・印刷コスト低減を実現するインクジェット技術によるオフィスプリンティング、商業・産業プリンティング、プリントヘッド向け版、②環境負荷低減を実現する新生産装置の拡充による生産システムの提供、により売上収益成長CAGR（年平均成長率）15%を見込む	大 2025年度までに成長領域CAGR15%見込

• The risk mitigation cost and the impact on CAGR in the 1.5°C scenario are qualitatively disclosed

• In order to strengthen resilience, meetings on environmental strategies are promoted regularly and business models are being shifted

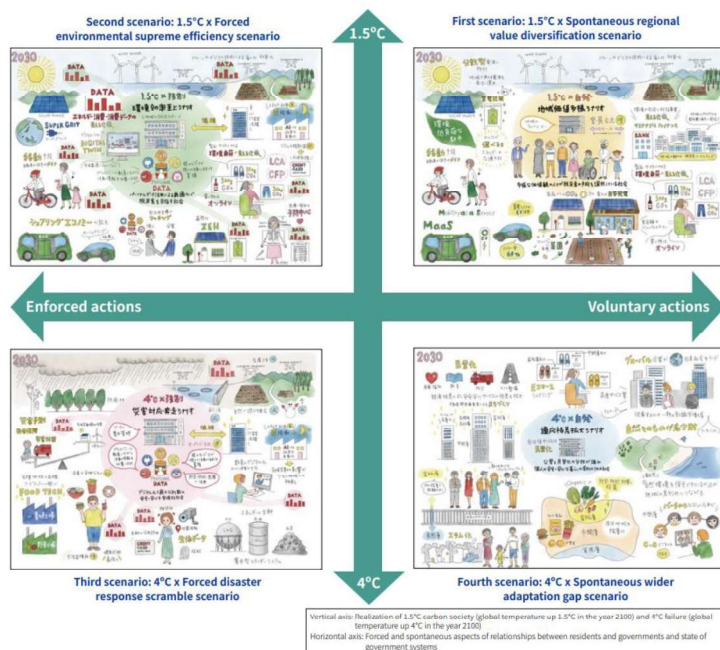
エプソンは、「循環型経済の牽引」「産業構造の革新」をマテリアリティとして設定しています。これを達成するために、エプソンの技術の源泉である「省・小・精の技術」を基盤に、イノベーションを起こし、さらなる温室効果ガス（GHG）排出量削減に取り組んでいます。さらに、ビジネスモデルの進化や、気候変動に対するレジリエンスの強化を図るため、「環境ビジョン2050」の実現に向け、2021年に環境戦略定例会の新設および下部組織として各分科会を整備し、取り組みを推進しています。

レジリエンス強化	2021年度取り組み実績
ビジネスモデルの進化	・お客様に長く使っていただく、廃棄物を減らせる環境に配慮した商品・サービスへのビジネスモデル転換（サステナブルサービスなどの拡大）について検討を開始
環境戦略定例会の推進	<ul style="list-style-type: none"> ・脱炭素 <ul style="list-style-type: none"> ・国内拠点の再生可能エネルギー 100%置き換え完了、海外拠点切り替え検討、設備更新による省エネ ・資源循環 <ul style="list-style-type: none"> ・地下資源消費ゼロに向けた資源循環指標の導入検討、再生材導入商品・再生機の販売開始 ・お客様のもとの環境負荷軽減 <ul style="list-style-type: none"> ・既存技術（他社製品）からの自社環境負荷低減商品・サービスへの置き換えによる削減貢献拡大 ・環境技術開発 <ul style="list-style-type: none"> ・シリコン素材再利用を含むスクラップ金属のリサイクル技術開発、ドライファイバーテクノロジー応用梱包資材テーマ選定

4-43 Source: Seiko Epson Corporation "Securities Report" [EDINET \(edinet-fsa.go.jp\)](https://www.edinet-fsa.go.jp/EDINET)

Scenarios are uniquely divided into 4 quadrants with reference to various external scenarios. A narrative is outlined for each scenario

- ✓ Scenarios are divided into 2 axes “1.5°C and 4°C” and “Enforced actions and Voluntary actions” and are illustrated in four quadrants
- ✓ The worldview are described in the narrative, and the referenced external scenarios are specified



Section	Summary
First scenario: 1.5°C x Spontaneous	In this scenario, unique local government services and ordinances are decided based on regional resources and cultures, with companies and communities leading regional revitalization and efforts to decarbonize. Residents and social populations increase in regions that successfully create cities with low environmental loads, and the revitalization of industry leads to sounder government finances. However, local governments that do not take these initiatives will see an outflow of population and industry, creating regional disparities.

(selected excerpt)

Referenced Published Scenarios

1.5°C Scenario	4°C Scenario
<ul style="list-style-type: none"> • IPCC AR6 WGI SSP1-1.9 • IPCC 1.5°C Special Report • IPCC AR5 RCP2.6 • IEA World Energy Outlook 2021 Net Zero Emissions by 2050 Scenario (NZE) • National Institute for Environmental Studies, Japan, Version SSP SSP1: Sustainable, SSP5: Reliance on Fossil Fuels 	<ul style="list-style-type: none"> • IPCC AR6 WGI SSP1-8.5 • IPCC AR5 RCP8.5 • IEA World Energy Outlook 2021 Stated Policies Scenario (STEPS) • National Institute for Environmental Studies, Japan, Version SSP SSP3: Regional Divisions, SSP4: Disparities

4-44 Source: NEC Corporation "Sustainability Report 2022" (https://www.nec.com/en/global/csr/pdf/2022_report.pdf)

Out of all the risks and opportunities in the 4 difference scenarios, the most impactful carbon pricing risk in 2030 is quantitatively analyzed

- ✓ **Quantitatively calculates and discloses** the business impact of carbon pricing risks
- ✓ For risks and opportunities that are especially impactful, it is stated that they are integrated in the medium-term management plan

Risks and Opportunities for All of NEC

NEC identifies and classifies impacts arising from climate change as short-term, medium-term, and long-term risks and opportunities. Under the examination process, NEC evaluates the future impact of climate change based on scenarios after existing businesses are reorganized from a climate change perspective. At the same time, we confirm assets for addressing risks and taking advantage of opportunities. Major risks and opportunities are reflected in mid-term management plans.

Risks	Description	Countermeasures
Transition risk	<ul style="list-style-type: none"> Risks from carbon pricing Assuming all of NEC's Scope 1 and Scope 2 emissions (about 210,000 tons) when SBTs are achieved in fiscal 2031 are subject to carbon pricing (\$100/t-CO₂), costs will increase by ¥2.3 billion (assuming ¥110/\$) Assuming impact from higher costs in upstream and downstream supply chains 	Increase use of renewable energy and achieve thorough gains in efficiency to realize each target for SBTs (2030 and zero CO ₂ emissions (2050)) (ongoing efforts in supplier engagement and to improve energy conservation performance of products)
Physical risk	Possible disruption of the supply chain due to weather-related disasters (floods, landslides, water shortages, etc.), long-term outages of lifelines such as electricity, gas, and water	Risk assessment of the entire supply chain, BCP measures (installing flood gates and moving power supply equipment) with provisions for weather-related disasters, such as river flooding, and strengthening of power generation in data centers

- 「Assuming all of NEC's Scope 1 and Scope 2 emissions (about 210,000 tons) when SBTs are achieved in fiscal 2031」×「Carbon Price (\$100/tCO₂)」= equivalent to 2.3-billion-yen cost increase
- Recognizes that higher costs in the upstream and downstream of the supply chain will have a financial impact on the business

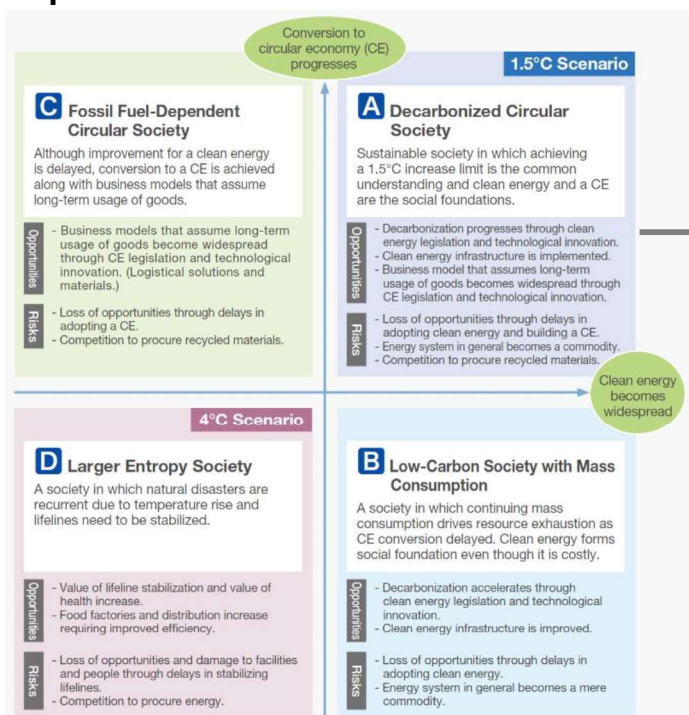
- ✓ (Reference) Internal carbon pricing were introduced to improve energy efficiency and to increase low-carbon facilities

Introduction of Internal Carbon Pricing

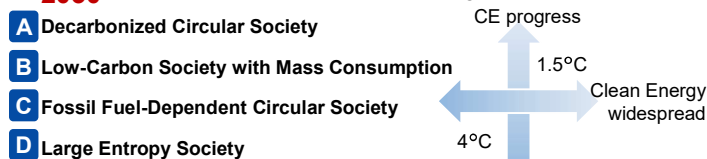
With the aim of improving energy efficiency and promoting the introduction of low-carbon facilities and equipment, we have set an internal carbon price. This price allows us to convert the CO₂ emission reductions that would result from a given capital investment into a monetary value, which we can then use as a reference when making investment decisions. Furthermore, the aforementioned carbon pricing mechanism will drive our decarbonization activities going forward and reduce the risk associated with potential increases in carbon taxes and emissions trading in a carbon-free society of the future.

4-45 Source: NEC Corporation "Sustainability Report 2022" (https://www.nec.com/en/global/csr/pdf/2022_report.pdf)

A total of 4 scenarios were set, including the 1.5°C scenario that was based on the IEA NZE. In the 1.5°C world view, the impact of ZEV share increase and the expansion of CO₂-free fuels are considered



- ✓ **Defines 4 scenarios including the 1.5°C, each scenario independently sets the world view for 2030**



- ✓ For each scenario, the impact on the industry and the change in customer values are described

A Decarbonized Circular Society

● **Impact on industries**
Concurrent progress of legislation and technological innovation related to clean energy and the circular economy help form a related infrastructure. This encourages investment in decarbonization in the automotive and housing industries, and advances the shift to business models that assume long-term use of goods in industries involved in the supply chain. It is also expected that not only products but also the construction of sustainable towns that utilize clean energy and a circular economy will attract investment.

● **Changes in customer value**
 Consumers: Eco-consciousness, cost reduction, ethical, on-demand usage, etc.
 Corporations: Eco-consciousness, cost reduction (energy saving, asset-light approach, better fuel efficiency, etc.), effect and efficiency enhancement (maximization of customer value, i.e. better experience value, etc.).

(Partial excerpt)

Group's seven operating companies developed climate change strategies and disclosed some of their measures. Indicated the resilience of the business for all four scenarios

A Decarbonized Circular Society
B Low-Carbon Society with Mass Consumption
C Fossil Fuel-Dependent Circular Society
D Large Entropy Society

✓ **Developed climate change strategies for 7 operating companies based on the results of each scenario analysis**

We can address the risks and opportunities corresponding to the above scenarios through any of our seven main operating companies shown below.

1. Panasonic Corporation
(Home appliance business, Air quality and air conditioning business, Food distribution business, Smart Energy System business, Electrical facility materials business)
2. Panasonic Automotive Systems Co., Ltd. (Automotive device business)
3. Panasonic Entertainment & Communication Co., Ltd. (Video, audio, and communication business)
4. Panasonic Housing Solutions Co., Ltd. (Housing equipment and building material business)
5. Panasonic Connect Co., Ltd. (Gemba process innovation business)
6. Panasonic Industry Co., Ltd. (System device business)
7. Panasonic Energy Co., Ltd. (Automotive battery business)

1. Panasonic Corporation	
1-1 Living Appliances and Solutions Company	
• Achieve an energy conservation performance for our products that surpasses that of our competitors, and utilize IoT/AI to offer energy-saving value for customers' daily lives.	A B
• Product manufacturing anticipating a longer product life and a circular economy.	A C
1-2 Heating & Ventilation A/C Company	
• Create safe, secure, clean and comfortable spaces with our exclusive clean technologies (e.g., with active air purification) in homes, shops, workplaces, transportation, public areas and many other locations.	A B C D
• Expand and improve eco-friendly products such as a hot-water heating with heat pump (A2W) that contributes to decarbonization and improve air quality, and optimization control connecting with air quality equipment and airconditioning equipment.	A B C D
1-3 Cold Chain Solutions Company	
• Promote energy conservation offering comprehensive support for our energy monitoring system covering from system installation to operations and maintenance. Our equipment refurbishing service prolongs system usage while contributing to a circular economy.	A B C
• Accelerate development of natural refrigerants with lower environmental impact through wider use of CO ₂ refrigeration equipment.	A B

✓ **Sated that resilience has been tested for all 4 scenarios**

The scenario analysis found that we could always focus on one or more of our businesses in each of the four scenarios. In other words, the analysis successfully verified the resilience of our business strategies. The analysis also helped us understand that we can contribute to building a sustainable society through our businesses. We continue our efforts to build the 1.5°C world, represented by our society (A).

Source: Panasonic Holdings Corporation website (<https://holdings.panasonic/global/corporate/sustainability/environment/governance/resilience.html>)

4-47

Quantitative analysis results are disclosed while clearly indicating the calculation method. Resilience is shown from the analysis results and integrated with the strategy

- ✓ **Clearly state the calculation method for quantitative financial impact analysis**
- ✓ **Regarding the risk of raw material cost increases, the company states that it will proceed with quantitative financial impact analysis for material crops that are feared to have a significant impact on the business in the future**

Potential price increase due to climate change
= (Estimated average price in 2030) x (Estimated procurement volume in 2030) x
(Standard deviation of the ratio of price change from the average over the past 25
years) x (Frequency of occurring extreme weather event)

As a result, it was estimated that there is no significant difference between the 1.5/2° C and 4° C scenarios as of 2030, and that climate impacts are expected to increase costs by approximately US\$140k per year. This is due to the projection that there is no significant difference in the range of temperature increase under either RCP scenarios until 2030.

In addition to promoting the procurement of sustainable palm oil, with regard to material crops other than oil palm, we should also be aware of the possibility that material demand may lead to higher procurement costs in the future, as well as the possibility that procurement itself may become impossible because of climate change. We will continue to analyze the financial impact and take measures to avoid or mitigate risks, such as changing materials and diversifying production areas.

(Excerpts on the risk of increased raw material costs due to rainfall and weather changes)

✓ **Transition plans have been developed for each of the company's activities, raw material procurement, water resources, and product development**

3.5.1 Efforts for Transition

Climate change is a central issue in the environmental area. All economic activities, including food production, resource and energy consumption, and waste disposal, are emitting CO₂ and accelerating climate change. If weather condition changes due to climate change, many environmental issues will be affected, such as water shortages and heat waves that will adversely affect ecosystems as well as human society.

CO₂ reductions should be prioritized for emissions from fuels consumption (Scope 1) and emissions from the use of energy supplied by others, such as electricity (Scope 2). In addition, the value chain of our business, including procurement, transportation, use of sold products, and disposal of waste, must be taken into account. We must comprehensively reduce CO₂ emissions by selecting materials and processes that emit less emissions in collaboration with stakeholders.

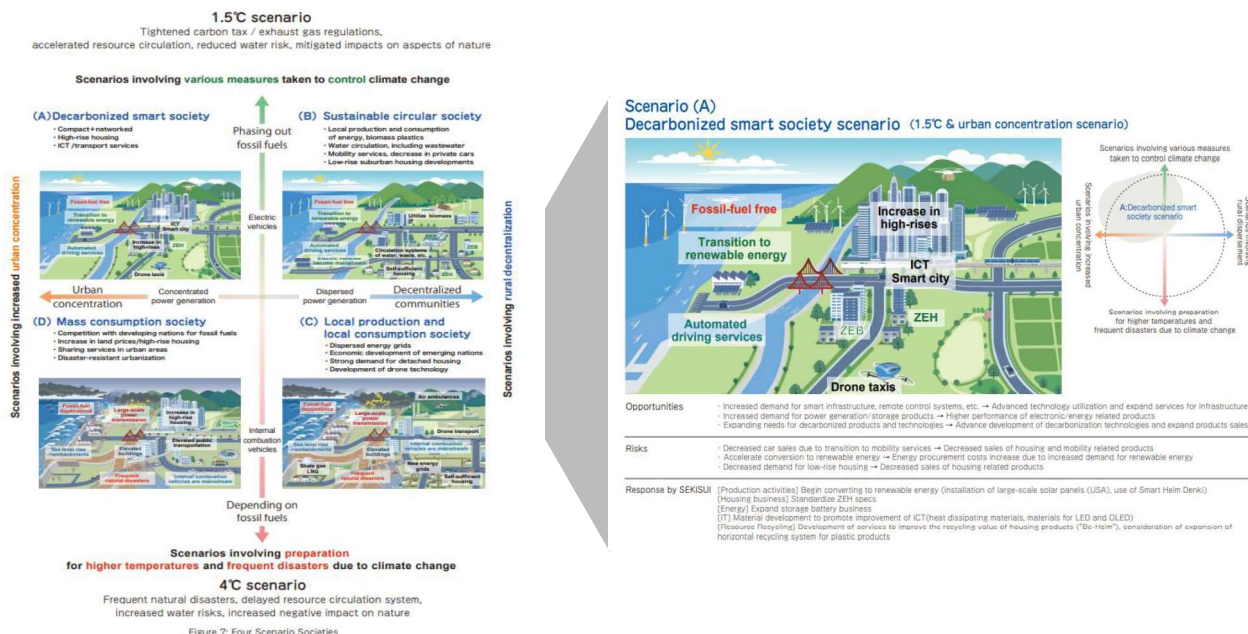
For actual efforts for CO₂ reduction, the first priority is to reduce or eliminate emissions through energy saving, including the development of new technologies, and for energy and materials required for business activities. Also, we will utilize renewable energy and renewable materials. Regarding fuels, the utilization of carbon-free fuels such as hydrogen and ammonia requires the development of social infrastructure, which still needs long time. In the meantime, we will study the feasibility of options such as electrification, renewable energy, and Carbon dioxide Capture, Utilization and Storage (CCUS), as well as carbon-free fuels, from both technical and economic aspects.

Example of transition plan for product development :

- **By 2025, replace all plastic cosmetic containers with sustainable packaging that is reusable, recyclable or biodegradable**
- Increase container recyclability, conserve input resources, and encourage recycling

Four axes are set, and a unique worldview is set based on various environmental issues

- ✓ **Set an original worldview** with reference to the Fifth and Sixth Assessment Reports of the UN's Intergovernmental Panel on Climate Change (IPCC)
- ✓ Based on the 1.5°C/4°C scenario, two axes were established: **“phasing out fossil fuels/depending on fossil fuels”** and **“urban concentration/decentralized communities”**
- ✓ In addition, **four climate change scenarios were assumed, considering the impact of other environmental issues interacting with climate change issues**



4-49

Source: SEKISUI CHEMICAL CO., LTD. "TCFD Report", 2022年度版 TCFDレポート(英語版) 0819 ([sekisuichechemical.com](https://www.sekisuichechemical.com))

Disclose the financial impact on business as an image of corporate value over the product life cycle

- ✓ **Analyze the financial impact of a product's life cycle**

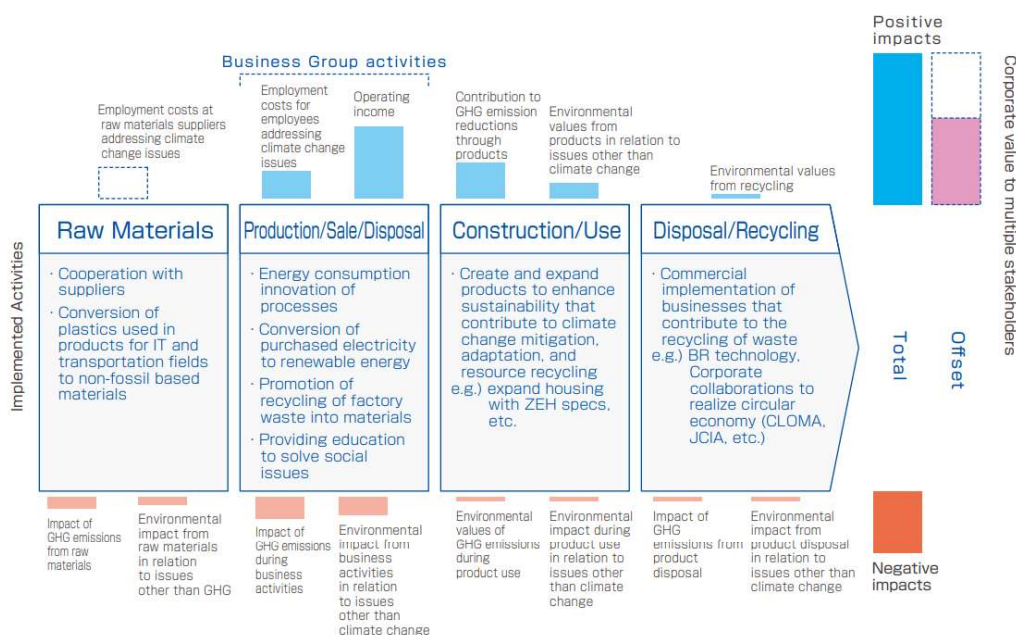


Figure 10(b): Details of positive and negative impacts on corporate value using impact-weighted accounting method (changes are based on FY2016)

4-50

Source: SEKISUI CHEMICAL CO., LTD. "TCFD Report", 2022年度版 TCFDレポート(英語版) 0819 ([sekisuichechemical.com](https://www.sekisuichechemical.com))

Response measures based on the results of scenario analysis are integrated with business strategies through long-term business and financial plans

- ✓ Analysis of (1) trends in carbon efficiency (eco-efficiency), (2) correlation between carbon efficiency and economic efficiency, and (3) comprehensive benefits to stakeholders using impact-weighted accounting methods confirms **the appropriateness of the strategy to address climate change issues and demonstrates the resilience of the business**
- ✓ **Verify and review the appropriateness of strategies** in each scenario and reflect them in the management plan

4-3. Validation of Climate Change Strategies

The following verifications were conducted on the validity of the strategies to address climate change issues, and confirming that they were appropriate.

- (1) Monitoring carbon efficiency (environmental performance)
- (2) Correlation between carbon efficiency and economic performance
- (3) Stakeholders' Comprehensive Income using impact-weighted accounting methodology

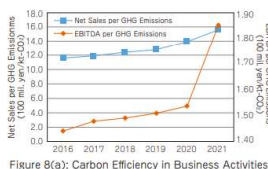


Figure 8(a): Carbon Efficiency in Business Activities

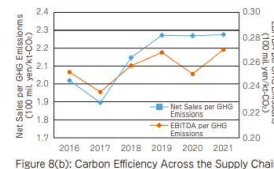


Figure 8(b): Carbon Efficiency Across the Supply Chain

Explain the appropriateness of strategies for (1) through (3) using multiple graphs

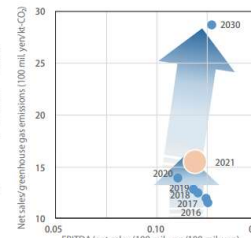


Figure 9: Correlation between Economic Performance and Environmental Performance

Scenario analysis

Scenario analyses were conducted to identify potential risks and opportunities that could arise from climate change, and it was confirmed that strategies to reduce risks or to convert risks into opportunities are in place for all scenarios assumed. The scenario analyses also reaffirmed the effectiveness of the strategies as a solution to the issues related to climate change. Based on the 1.5°C scenario and the 4°C scenario, two axes were set; one axis is whether climate change mitigation progresses or not; and the other axis is decentralization of social systems in rural area or concentration in large cities. Four climate change scenarios were envisaged taking into account the mutual impact of other environmental issues with climate change issues. Recognizing that environmental issues such as resource circulation, water risk, and biodiversity are related to climate change issues, measures from a broader perspective were reaffirmed. Strategies to re-establish milestones and accelerate efforts to realize a carbon-free society were reviewed in each scenario, while examining the validity of these strategies. Activities will continued to be promoted based on the current medium-term management plan, which reflects the climate change strategies, with the aim of realizing a carbon-free society. At the same time, a transition plan will be implemented that accelerates efforts in the formulation of the next management plan starting next fiscal year.

4-51 Source: SEKISUI CHEMICAL CO., LTD. "TCFD Report", 2022年度版 TCFDレポートレアウト (英語版) 0819 (sekisuichemical.com)

In FY2022, scenarios for rice and chicken procurement are being analyzed, and efforts to improve the level of scenario analysis can be seen following FY2020 and FY2021

- ✓ Scenario analysis starting in 2019; in FY2020, risks and opportunities are identified by business and by scenario of high importance; **business impact assessment compares achievement of Group CO2 emissions reduction targets with the carbon tax burden at the status quo CO2 emissions (baseline)**
- ✓ In FY2021, "water risk due to extreme weather events" was selected as a risk common to multiple projects, and climate change scenarios were developed
- ✓ In FY2022, **the risks and opportunities posed by climate change to rice and chicken procurement are being considered, and scenario analysis is becoming more sophisticated**

In FY2020, carbon tax impact assessment is conducted

In FY2022, risks and opportunities of climate change for rice and chicken procurement will be examined, and future yield projections for each climate scenario will be analyzed (see next page for details)

5 今後の炭素税の影響評価

なりゆきのCO₂排出量(ベースライン)では、2030年まで累計で約105~130億円(年平均約17~22億円)の炭素税の負担と想定しました。
グループCO₂排出量削減目標の達成(2015年度比2030年に30%削減)により、炭素税の費用は約67~83億円に軽減され、ベースライン比で約37~47億円分の影響を緩和できると想定しています。

グループで想定される炭素税負担額と軽減額(2025~2030年平均・累計)

	炭素税負担額 (ベースライン)	炭素税負担額 (削減目標達成時)	削減目標達成時の炭素税負担軽減額 ベースライン比
累計	約105~130	約67~83	約37~47
年平均 (2025~2030年度)	約17~22	約11~14	約6~8

※炭素税の削減:2025年30ppm/年CO₂とし、2030年を75~100ppm/年CO₂とし、2026~2029年はそれぞれ毎年削減で上昇すると仮定し、100ppm/年として試算

In FY2021, impact assessment of water risk is conducted

2021年度

■異常気象による「水リスク」についての気候変動シナリオ

	①将来の河川洪水リスク		②将来の海上高潮(高潮洪水)リスク	
	内容	結果	内容	結果
事業領域	対象地点の位置する地域の気象ハザードマップにおいて浸水想定区域となる河川流域をリストアップし、河川流域の位置と浸水想定区域との関係を確認する。	対象地点の位置する地域の気象ハザードマップにおいて浸水想定区域となる河川流域をリストアップし、河川流域の位置と浸水想定区域との関係を確認する。	対象地点の位置する地域の気象ハザードマップにおいて浸水想定区域となる河川流域をリストアップし、河川流域の位置と浸水想定区域との関係を確認する。	対象地点の位置する地域の気象ハザードマップにおいて浸水想定区域となる河川流域をリストアップし、河川流域の位置と浸水想定区域との関係を確認する。
対策	国内 21地点 (工務関係、水関係13地点)	国内 145地点 海外 16地点	国内 145地点 海外 16地点	国内 145地点 海外 16地点
事業領域	ハザードマップが更新されている地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点	ハザードマップが更新されている地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点	ハザードマップが更新されている地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点	ハザードマップが更新されている地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点 ハザードマップが更新されていない地域に所在する地点

In FY2023, we conducted a scenario analysis on the procurement of rice and chicken.

Material Risks and Opportunities by Business and Scenarios Identified in 2020

Business		Risks	Business	Opportunities		
Foods Business	Chicken	General abnormal weather	Baseline scenario	Changes in weather patterns	Increased demand for frozen and processed foods	
	Rice			Strengthening of environmental countermeasures within the supply chain	Increased demand for ethical products that are compliant with the Sedex platform and are created using globally certified raw materials	
	Shrimp				Increased demand for the curtailment of food loss within the supply chain through the development of eco-friendly products and technological development	
	Vegetables, marine products, and meat and poultry products	Flooding, rising sea levels	Increased environmental awareness		Development and expansion of demand for products created using sustainable raw materials	
	Common	Low-carbon policies	1.5°C scenario	General abnormal weather	Increased cost for measures for converting to renewable energy and equipment electrification, elimination of emissions	Increase in sales resulting from expanded customer base through strengthened disaster countermeasures and greater resilience
					Environmental countermeasures within the supply chain	Curtailment of transactions; higher cost of measures such as the maintenance of global certifications
Logistics Business	Baseline scenario	General abnormal weather	Baseline scenario	Modal shift	Cost reduction achieved through a modal shift that improves transportation efficiency	
	1.5°C scenario				Increased environmental awareness	Increase in number of business partners due to higher evaluations as a company that actively discloses information related to environmental countermeasures

Note: The bioeconomy business is characteristically resistant to the impact of climate change. Accordingly, we have not currently identified any material factors or no

Note: The bioscience business is characteristically resistant to the impact of climate change. Accordingly, we have not currently identified any material factors in our bioscience business.

Climate Change Scenario in FY2022 https://www.nichirei.co.jp/sites/default/files/inline-images/r/integrated/pdf/p58_p61.pdf (Japanese only)
Climate Change Scenario in FY2021 https://www.nichirei.co.jp/sites/default/files/inline-images/r/integrated/pdf/p21_p24.pdf (Japanese only)

By quantifying financial impacts through multi-year yield analysis, strategies for GHG reduction related to raw materials and ensuring resilience in transition scenarios are presented

- ✓ Using IPCC RCP scenarios (2.6, 4.5, 6.0, and 8.5), simulations were conducted to 2090 for major suppliers of rice and chicken, and **future yield projections were quantitatively analyzed for multiple years**
- ✓ Resilience is also shown by stating that GHG reductions related to raw materials will be achieved through the development of livestock feeds and breeding of high temperature tolerant and high yielding rice, **thereby ensuring an advantage in the transition scenario**

■ Physical Risk Impact Assessment (Analysis of Estimated Change in Yield by Climate Scenario)

Rice Analysis Criteria

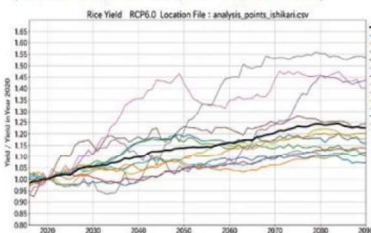
Area	Kanto, Tohoku and Hokkaido production regions: 11 zones
Climate scenarios	RCP 2.6, RCP 6.0
Data used	ISIMIP (the Inter-Sectoral Impact Model Intercomparison Project)

Average Value of Yield Simulations When the Yield for the Base Year (2020) Is 1.00

	RCP 2.6			RCP 6.0		
	2030	2050	2080	2030	2050	2080
Hokkaido						
Ishikari area	1.06	1.15	1.13	1.06	1.14	1.24
Kamikawa area	1.09	1.27	1.26	1.13	1.26	1.50
Sorachi area	1.04	1.09	1.10	1.04	1.08	1.11
Ibaraki Prefecture	0.99	1.04	1.02	1.02	1.04	1.09
Kanto						
Gunma Prefecture	1.01	1.05	1.02	1.03	1.05	1.11
Tochigi Prefecture	1.00	1.05	1.02	1.02	1.03	1.09
Aomori Prefecture	1.02	1.06	1.06	1.03	1.06	1.10
Akita Prefecture	1.02	1.05	1.03	1.03	1.06	1.10
Tohoku						
Yamagata Prefecture	1.01	1.05	1.03	1.04	1.05	1.10
Miyagi Prefecture	1.02	1.06	1.04	1.04	1.06	1.13
Iwate Prefecture	1.03	1.07	1.05	1.03	1.06	1.11

Using 2020 as the base year, we carried out a rice yield simulation (through to 2090) for our major domestic suppliers. The table below shows the results of analyzing climate scenarios RCP 2.6 and RCP 6.0 for yields in 2030, 2050, and 2080, when the base year is 1.00. (Values are the average of 12 simulations, combining four global climate models and three yield models.) Even in the scenario where temperatures rise (RCP 6.0), yields increase, rising to between 1.11 and 1.50 in Hokkaido in 2080.

Analysis Model Example
(Ishikari Area, Hokkaido, RCP 6.0, Rice Yield)



"If climate change mitigation measures are strengthened (transition scenario), **tighter regulations on greenhouse gas (GHG) emissions could increase the cost of raw material procurement.** On the other hand, we expect decarbonization measures to be promoted in the agriculture and livestock farming sectors. **By working with our suppliers and reducing GHG emissions related to raw materials, we believe we could gain an advantage even in the transition scenario**"

Chicken Analysis Criteria

Area	Japan: 6 zones, Thailand: 2 zones, Brazil: 1 zone
Climate scenarios	Japan: RCP 2.6, RCP 8.5 Overseas: RCP 4.5, RCP 8.5
Data used	Bias corrected climate scenarios over Japan based on CDFM method* using CMIP5* (National Institute for Environmental Studies)

For chicken yield, the analysis used the following formula (based on material published in 2006). According to the literature, meat production decreases when the average temperature rises to 23°C or higher.

$$y = -0.3239x^2 + 15.042x - 74.632$$

y = Meat production volume when production volume for temperatures below 23°C is 100
x = Average temperature during the season to be analyzed (unit is °C)

Source: Yamazaki, et al., Animal Science Journal Vol. 77 (2), p. 231-235 (2006)

4-53 Source : Nichirei Corporation "Nichirei Integrated Report 2022" [nichirei_IntegratedReport2022_all_a3.pdf](https://www.nichirei.co.jp/ir/2022/all_a3.pdf)

[Example of Securities Report : Members Co., Ltd. (Service (other))]

The financial impact is analyzed and disclosed in four levels, and the basis for the calculation is provided for the increase in procurement costs of environmental value certificates for electricity, which was analyzed as having a particularly large impact

②戦略

当社はTCFD提言に基づき、全社を対象として気候変動リスク・機会による事業インパクト、対応策の検討に向けたシナリオ分析を行い、1.5℃～2℃及び4℃の気温上昇時の世界を想定し、2020年度より将来までの間に事業に影響を及ぼす可能性がある気候関連のリスクと機会の重要性を評価しました。

その結果、リスクとしては、電力価格の上昇に伴う環境価値証書価格の大幅拡大が懸念され、価格影響額を試算した結果、以下のとおりコスト上昇の可能性があることがわかりました。

(2020年実績、2030年見込み)

リスク	1.5℃～2℃ 財務インパクト	計算式
環境価値証書価格	約1億円のコスト	1tCO2あたりのJクレジット価格×調達量(※1)×(※2)
※1 Jクレジット価格の推移データを参考に、1.5℃～2℃では2020年10月の日本政府の脱炭素宣言～現在までのJクレジット価格の推移率を使用し、2030年のJクレジットの価格を算出。		
※2 事業拡大に伴う増加分も加味。		

- **Disclose quantitative impact of "Environmental Value Certificate Price" among transition risks**
- **Basis for calculation is described in the notes**
"J-credit price per 1t-CO2 (forecast for 2030) x procurement volume (taking into account the increase due to business expansion)"

・リスク (※リスク項目を一部抜粋して掲載)

区分	想定される事象	当社へのリスク	対策
慢性的物理リスク	(1)降水パターンの変化や気象パターンの極端な変動 (2)平均気温上昇 (3)海面上昇	(1)(2)(3)慢性的な物理リスクの一例として、酷暑日の増加による電力需要の逼迫に伴う空調費用の上昇リスクが考えられます。 海面上昇により沿岸部の事業所、発電所、従業員の住宅に影響を受け業務遂行に支障をきたし、 中～大規模のリスクが考えられます。	(1)(2)(3)データセンターの利用 自社発電等の各種施策の利用検討により安定供給を確保、省エネ施策の実施。 災害発生時の対応計画策定、浸水対策 災害発生時のBCP対応計画策定

※財務影響度 小：500万円以内 中：1,000万円以内 大：5,000万円以内 甚大：5,000万円以上

- For climate change risk/opportunity categories other than the above, the **financial impact is divided into "small to medium to large to very large". A sense of the scale of the amount is also provided**

Quantitative impact is disclosed for carbon taxation risks for which the monetary basis is relatively high, referring to the 1.5°C/4°C scenario (SSP1-1.9, SSP5-8.5)

(b)気候変動による主要なリスクと機会

当社グループが、シナリオ分析を経て特定した主要なリスクとその発生可能性、財務影響は以下のとおりです。財務影響については、リスク項目毎に試算し、金額根拠の確度が比較的高いと考えられる炭素税のみ数値で示しています。

気候変動による主要なリスク	発生可能性	財務影響	リスク低減施策
1 カarbonニュートラル実現に向けたカーボנקレジット価格の高騰	高 → (注1)	高	2031年3月期に目指す自社の事業活動及びバリューチェーン全体を通じたカーボニュートラルに向けて、オフィスの省エネルギー化と再生可能エネルギーへの転換、リモートワーク推進や主要バリューチェーンへのエンゲージメント等を通してGHG排出量の実質削減を進める。
2 炭素税課税の導入及びその価格高騰	高 →	低 (約4億円(注2))	
3 木材や輸送費の高騰	高 → (注1)	低	情報誌ビジネスで使用する用紙について、GHG低排出用紙の安定供給契約を継続する。また、製紙会社に対するエンゲージメントを行う。
4 サーバーの水没や損壊	低 →	高	サーバー設置地域の水没や損壊リスクモニタリングを開始し、一定リスクに達した際に移転や代替サーバー等の検討を行う。

(注1) 2031年3月期に向けて、発生可能性が上昇する見込みである場合は「→」、発生可能性が大きく変化しない見込みの場合は「→」と記載。

(注2) 2031年3月期時点の炭素税算定における前提は以下のとおり。

- 炭素税価格はIPCC SSP Databaseを参照し、約\$300 /t-CO2とする
- 当社グループの事業活動におけるGHG排出量(スコープ1、2)は、2020年3月期の実績である約12,000t-CO2を用いる(2022年3月期以降は再生可能エネルギー化を進めるため、スコープ2の温室効果ガス排出量は約0t-CO2となる想定)

• Among transition risks, **quantitative impact is disclosed for "introduction of carbon taxation and its price escalation"**

• **Basis for calculation is described in the note:**
"GHG emissions in Scope 1 and 2 (actual results for FY2020) x carbon tax (\$300/tCO2)"

(Quantitative Impact Disclosure)

(Disclosure of Basis for Calculation)

4-55 Source : Recruit Holdings Co., Ltd. "Securities Report" [EDINET \(edinet-fsa.go.jp\)](https://www.edinet-fsa.go.jp/)

4. Scenario Analysis Example Disclosure (Domestic and Overseas)

4-1 Domestic Disclosure Examples

4-2 Overseas Disclosure Examples

Chapter 4. Scenario Analysis Example Disclosure (Domestic and Overseas)

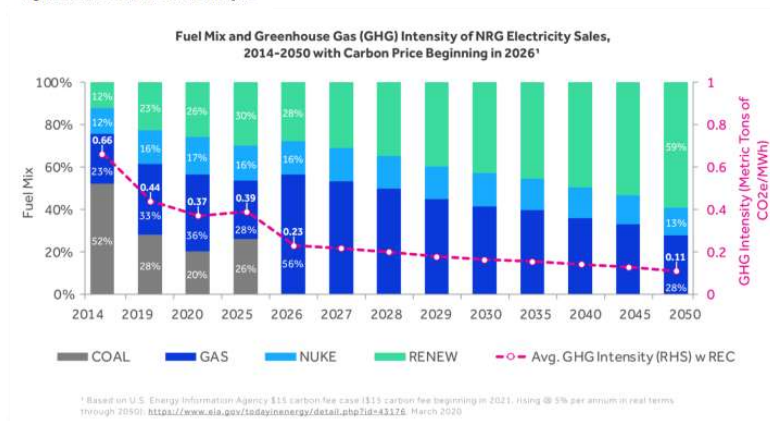
Provide examples of national and international disclosures on scenario analysis based on the latest findings

[Oversea Disclosure Examples: NRG Energy Inc. (United States, Energy, 1/2)]

3 4 5

Scenario analysis was conducted based on the IEA SDS scenario and scenarios provided by the U.S. EIA. The world view is quantitatively described with formulas

Figure 5: Climate Risk Scenario Analysis



✓ Shows the change in the 2050 electricity sales fuel mix, and discloses the calculation methods

- Formula :
NRG electricity sold = NRG retail sales + Other market sales
- Data sources :
 - 2014, 2019, 2020 : NRG actuals
 - 2025 : NRG 2020 budget
 - 2026 to 2050 : NRG and U.S. EIA scenario data

- NRG electricity sold = NRG retail sales + other market sales
- NRG electricity sold is supplied by (1) NRG electricity generation + (2) NRG renewable and non-renewable electricity power purchase agreements (PPAs) + (3) market purchases of electricity when NRG's retail load (demand for electricity by NRG's customers) exceeds the sum of NRG electricity generation and NRG electricity PPAs
- NRG retail load assumed to grow @ 1.2% per annum, 2026-2050
- Data sources:
 - 2014, 2019, and 2020: NRG actuals
 - Excludes divestitures of power plants over 2014-2020
 - Includes electricity generation and retail load in ERCOT, PJM, NYISO, ISO-NE, and MISO regions, as well as generation in CAISO
 - Adjusted per the methodology described below
 - 2025: NRG 2020 budget, adjusted per the methodology described below
 - 2026-2050: NRG and U.S. EIA scenario data

Source : NRG Energy Inc. "2020 TCFD Report" (<https://www.nrg.com/assets/documents/sustainability/2020-TCFD.pdf>)

4-57

[Oversea Disclosure Examples: NRG Energy Inc. (United States, Energy, 2/2)]

3 4 5

4 transition plans were developed to achieve net zero targets by 2050

NRG's Transition Levers

To meet NRG's 1.5°C-aligned net-zero by 2050 goal, NRG is using multiple transition levers. These transition levers can be grouped into four main categories:

- DECARBONIZATION of existing business lines
- DIVERSIFICATION into low emissions businesses
- DIVESTMENT of select high emissions assets
- DEPLOYMENT of new technologies and innovations

✓ Several transition initiatives to reach the net-zero by 2050 goal

- Decarbonization of existing businesses
- Diversifying into low emission businesses
- Divestment of select high emissions asset
- Development of new technologies and innovations

Divestment of high emission assets

On NRG's journey to net-zero emissions by 2050, NRG will also look to exit certain high GHG activities via strategically targeted sales of non-core assets where the opportunity generates appropriate risk-adjusted returns for shareholders. Over 2014-2020, NRG divested 27,510 MW net capacity of fossil generation. In addition, in 2021, NRG divested 4.8 GW of fossil-fired power plant capacity. We will continue to monitor the market for future portfolio optimization opportunities.

✓ Each transition initiatives are described in detail

- Example : Divestment of select high emissions asset in detail
 - Over 2014-2020, 27,510 MW net capacity of fossil generation has been divested

Source : NRG Energy Inc. "2020 TCFD Report" (<https://www.nrg.com/assets/documents/sustainability/2020-TCFD.pdf>)

4-58

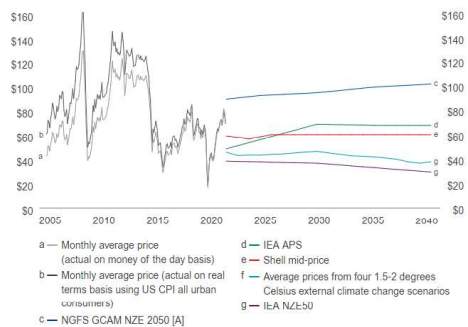
[Oversea Disclosure Examples: Shell plc. (United Kingdom, Energy)]

3 4 5

Oil and gas price projections based on external climate change scenarios have been considered, and an assessment of the impact of climate change on the financial statements has been conducted and disclosed

- ✓ **The impact assessment of climate change and energy transition on the financial statements is conducted as a sensitivity analysis to test financial resilience**
- ✓ **As a basis for the sensitivity analysis, oil and gas price projections based on external climate change scenarios are considered, as oil and gas prices are one of the key assumptions supporting the financial statements**

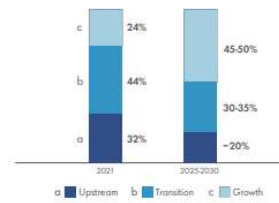
Oil price assumptions



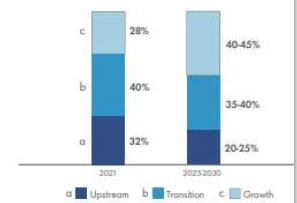
Assumptions for oil and gas prices by scenario (only oil prices are listed below)

- IHS Markit/ACCS 2021: Oil prices gradually decline toward \$20/barrel in 2039, recover to \$46/b in 2046, and decline again toward \$40/barrel in 2050
- Woodmac WM AET 2°C: Oil prices gradually decline toward \$10/barrel in 2050
- IEA NZE50: Oil prices gradually decline to \$25/barrel in 2050
- IEA SDS: oil prices gradually increase towards \$56/barrel in 2030 and gradually decrease to \$50/barrel in 2050

Cash capital expenditure evolution



Operational expenditure evolution



Assess impact on \$65 billion of integrated gas assets and \$89 billion of upstream assets as of December 31, 2021, considering various external climate scenarios

- Adopted the average of the prices foreseen by the four scenarios: IHS Markit/ACCS 2021, Woodmac WM AET 2°C, IEA NZE50, and IEA SDS
 - **Recoverable values of \$13-16 billion and \$14-17 billion, respectively, were assessed** below book value as of December 31, 2021
- IEA NZE scenario adopted
 - **Recoverable values of \$10-12 billion and \$5-6 billion, respectively, were assessed** below book value as of December 31, 2021
- Considering a sensitivity of -10% or +10% as an average over the entire period to Shell's medium-term price outlook,
 - Applying -10%, **the recoverable amount would be \$8-10 billion and \$4-5 billion, respectively, above the book value** as of December 31, 2021
 - Applying +10%, the recoverable amount would be \$3-5 billion and \$3-4 billion, respectively, **above the carrying amount** as of December 31, 2021

Source : Shell "Annual Report and Accounts 2021" (https://reports.shell.com/annual-report/2021_assets/downloads/shell-annual-report-2021.pdf, <https://reports.shell.com/annual-report/2021/consolidated-financial-statements/notes/climate-change-and-energy-transition.html>)

4-59

[Oversea Disclosure Examples: Woodside Energy Limited (Australia, Energy)]

3 4 5

To test the financial resilience of the portfolio, the potential impact on average annual free cash flow was estimated, and targets for investment plans that contribute to low-carbon

- ✓ **Estimated financial impact using four IEA scenarios (STEPS, SDS, APS, and NZE scenarios)**
- ✓ **Scenario analysis results stated that business impact (impact on FCF) is small, indicating resilience**

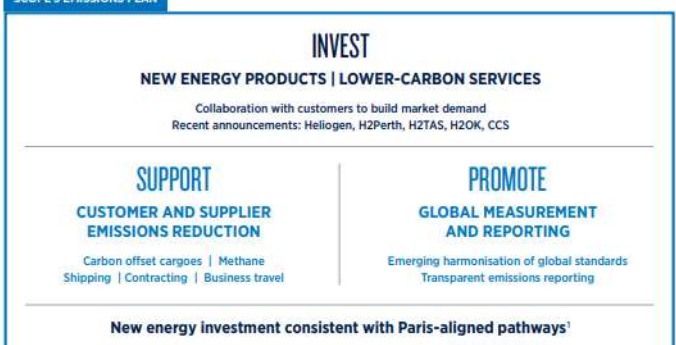
MODELLING IMPACT OF CLIMATE SCENARIOS ON POTENTIAL ANNUAL AVERAGE FREE CASH FLOW FROM CURRENT PRODUCING AND SANCTIONED ASSETS (NOT GUIDANCE)^{1,2}



- Average annual free cash flow (FCF) generation increases from the late 2020s
- After that, the analysis assumes no new oil and gas investments, which would decrease due to natural attrition of older assets in the portfolio

- ✓ **Explain resilience as realizing additional value by investing in projects that complement the existing portfolio, including new energy products such as hydrogen**

SCOPE 3 EMISSIONS PLAN



Announced an investment target of US\$5 billion by 2030 as part of its portfolio of new energy products and low-carbon services development

- H2 Perth (a world-scale hydrogen and ammonia production facility)
- H2OK (Planned construction liquid hydrogen production facility)
- H2TAS (water and ammonia production facility)

Source : Woodside Energy Limited, "2021 Climate Report" (https://www.woodside.com/docs/default-source/investor-documents/major-reports/-static-pdfs/2021-climate-report/climate-report-2021.pdf?sfvrsn=7ae837b1_5)

4-60

[Overseas Disclosure Examples: Canadian National Railway (Canada, Transportation)]

3 4 5

Comprehensive disclosure of risks and opportunities based on the company's strategy and business model. Quantitative business impact assessment of all major risks and opportunities

- ✓ A risk materiality assessment is performed for four risks and four market opportunities, and the **potential impact on the business and the estimated cost required to manage the risk/realize the opportunity are disclosed quantitatively**. However, there is no clear description of the specific calculation process

TABLE 4: Climate-related Opportunities

Description	Type	Potential Impact to Business	Strategic Planning, Risk Mitigation and Opportunities	Metrics ⁽¹⁾
OPPORTUNITY				
Demand for Low-Carbon Goods and Services The movement towards carbon pricing in North America coupled with the growing pressures on CN customers to reduce their supply chain carbon emissions present important opportunities for us to position the environmental benefits. The opportunity to increase revenues	Transition: Market. Opportunity level: Medium-High	May promote growth within our intermodal and carload business segments. Time horizon: Medium term Potential financial impact figure: Up to \$8 billion, based on our truck-competitive business revenue. Estimated cost to realize opportunity: \$2.9 billion	We actively engage with customers to position the environmental benefits of rail. CN furthermore invests in the expansion and strengthening of the Company's rail network. Investments include key track expansion projects that will boost capacity allowing CN to better service our customers. Other program elements will focus on the replacement, upgrade and maintenance of...	<ul style="list-style-type: none"> Market demand and supply projections Intermodal commodities growth projections Emissions regulations with potential impact on customer revenues

[Opportunities to increase revenues through increased demand for low-carbon goods and services]

- Transportation of freight by rail instead of truck can reduce GHG emissions by up to 75%, and positioning rail as the most environmentally friendly way to transport freight overland could provide an opportunity to increase revenues in our intermodal and auto transportation segments

- Potential financial impact: up to \$8 billion
- Estimated cost to realize opportunity: \$2.9 billion
- ※ Calculation process not yet described

[Opportunities to increase revenues by accessing emerging markets]

- Risk that market contraction will reduce demand for commodities that currently comprise a large percentage of CN's commodity portfolio due to changes in consumer behavior and climate change regulations, resulting in lower revenues
- Risk of a 5% loss in rail freight revenues** if consumer preferences impact our general coal customers and all coal shipments cease

- Potential financial impact: \$400-700 million
- Estimated administrative costs: \$500,000
- ※ Part of the basis for the calculation is provided, but the calculation process is not described

4-61 Source : Canadian National Railway "2020 TCFD Report" (<https://www.cn.ca/-/media/Files/Delivering-Responsibly/CN-2020-TCFD-Report-en.pdf?la=en>)

[Overseas Disclosure Examples: FirstGroup plc (United Kingdom, Transportation)]

3 4 5

Original scenarios including 1.5°C are set and world views are described qualitatively and quantitatively

- ✓ Based on IEA SDS and NZE scenarios, 4 **original scenarios are set according to external technological trends and degree of regulation**

- ✓ Potential financial impact from transition risks and opportunities assessed for each scenario, cumulatively over a five-year period

Table 1: Climate scenarios considered in risk modelling

Policy Pathway	1 No Policy	2 Current Policy	3 Stated Policy
Global temperature increase	>4°C	3°C	2.5°C
Global emissions reduction target	0% by 2100	-50% by 2100	-75% by 2100

Conducted modeling work on climate change-related risks. Conducted modeling work. Five scenarios were considered in the 1.5°C to 4°C temperature range

4 Paris Agreement	5 Paris Aspiration
2°C	1.5°C
Net-Zero by 2070	Net-Zero by 2050

This report describes 1.5°C / 2.5°C / 4°C (the two most extreme scenarios and the "stated policy" scenario)

- 4°C (no policy)** : even existing policies are partially or completely abolished. Catastrophic physical impacts ranging from extreme weather events to mass migration
- 2.5°C (Stated Policy)** : Middle-of-the-road model. Globally, policies are relatively the same as today, additional measures may be introduced in the future. However, low-carbon technology diffusion will be slow, resulting in higher temperatures and more frequent extreme weather events
- 1.5°C (Paris Aspiration)** : Assumes that all countries will work together to ensure that the rise in global temperatures is limited as much as possible by an immediate transition to virtually zero carbon emissions. Global transport is still primarily fossil fuel driven, and the 1.5°C pathway is projected to have a significant impact on the transport sector

Transition risks/opportunities	1 No Policy	3 Stated Policy	5 Paris Aspiration
Policy Action by central government/regulators, including carbon pricing	<ul style="list-style-type: none"> Low impact Expected carbon price of ~£2 per tonne by 2025 in some regions Low emission zones leading to some route constraints 	<ul style="list-style-type: none"> Medium impact Expected carbon price of ~£30 per tonne by 2025 across the UK Zero emission zones leading to further route constraints and potential loss of licence to operate 	<ul style="list-style-type: none"> Medium impact Expected carbon price of ~£65 per tonne by 2025 across the UK Zero emission zones leading to significant route constraints and potential loss of licence to operate
Technology Cost and availability of new technology to support a lower-carbon economy	<ul style="list-style-type: none"> Low impact Potential impairment of carbon-intensive vehicles Ongoing investment in zero-emission fleet to meet current commitments 	<ul style="list-style-type: none"> Medium impact Increasing impairment of carbon-intensive vehicles Some investment in zero emission fleet ahead of current schedule Some increase in cost of zero-carbon vehicles and green electricity 	<ul style="list-style-type: none"> High impact Significant investment in zero-emission fleet ahead of schedule Substantial increase in cost of zero carbon vehicles and green electricity, due to demand outstripping supply
Investors Financing influenced by environmental credentials	<ul style="list-style-type: none"> Low impact Low focus from investors on green credentials 	<ul style="list-style-type: none"> Medium impact Moderate focus by investors More favourable interest rates for green companies 	<ul style="list-style-type: none"> High impact Significant focus by investors Expected green covenants in financing
Customers Demand driven by sustainability of products and services, leading to increased modal shift towards public transport	<ul style="list-style-type: none"> Limited opportunity Small shift to public transport, due to increasing environmental impacts and customers' climate awareness No transport policy to encourage modal shift to public transport 	<ul style="list-style-type: none"> Medium opportunity Increasing shift to public transport due to customers' growing climate consciousness Some transport policy to encourage modal shift to public transport 	<ul style="list-style-type: none"> High opportunity Substantial shift to public transport due to customers' high climate consciousness Substantial transport policy to encourage modal shift
<ul style="list-style-type: none"> Low impact = <£20m Medium impact = £20m - £50m High impact = >£50m Limited opportunity = <£20m Medium opportunity = £20m - £50m High opportunity = >£50m 			

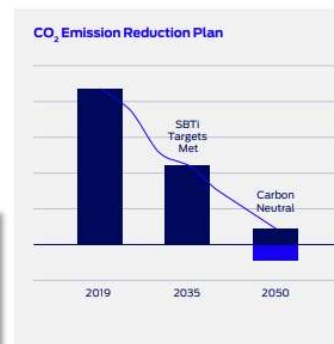
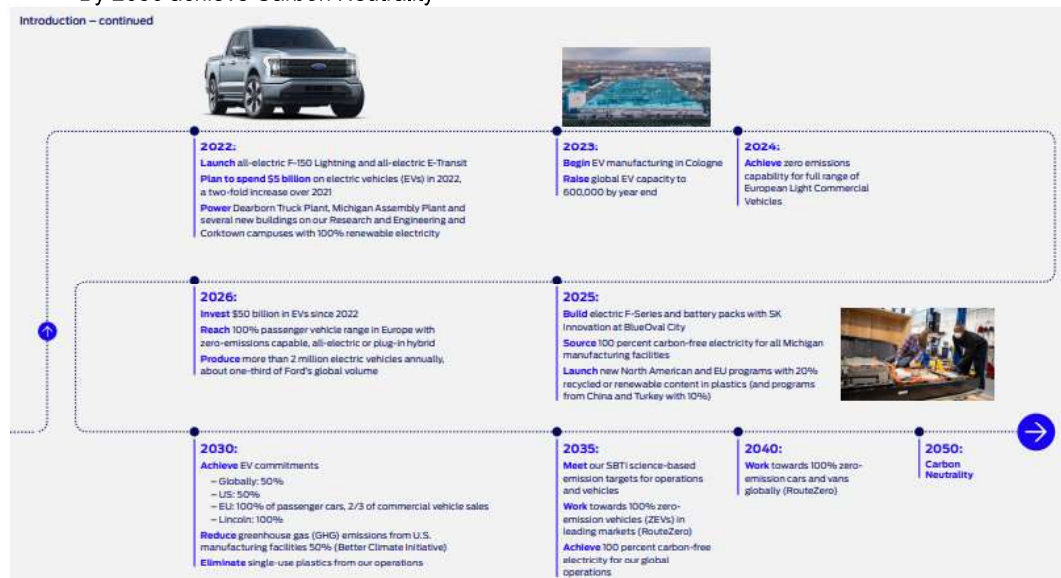
4-62 Source : FirstGroup plc "Annual Report and Accounts 2022" (<https://www.firstgroupplc.com/-/media/Files/F/FirstGroup-Plc/reports-and-presentations/reports/firstgroup-annual-report-2022.pdf>)

[Oversea Disclosure Examples : Ford Motor Company (United States, Transportation)]

3 4 5

✓ Toward carbon neutrality in 2050, a step-by-step roadmap to cut emissions has been decided

- By 2040 achieve zero emissions for full range of European Light Commercial Vehicles
- By 2030 achieve EV commitments of 50% globally, 50% in the U.S., 100% in the EU
- By 2035 meet SBTi science-based emission targets for operations and vehicles
- By 2050 achieve Carbon Neutrality



Source : Ford "2022 TCFD Report" (<https://corporate.ford.com/content/dam/corporate/us/en-us/documents/reports/tcf-report.pdf>)

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[Overseas Disclosure Examples: The Dow Chemical Company (United States, Material, Building)]

3 4 5

✓ Explains the scenario and claims the strategies are resilient with the business opportunities in both scenarios

Dow takes an exploratory approach to climate-related scenario analyses to evaluate a range of different futures. Most recently, Dow has utilized two boundary scenarios to assess our strategy: one where our global ambition aligns with the International Energy Agency (IEA) Sustainable Development scenario of decarbonizing the economy, and another that aligns with the Regional Rivalry Shared Socioeconomic Pathway (SSP) 3.0, which explores a more uneven path to decarbonization. As Dow is a large consumer of energy, scenarios that focus on trends in energy consumption are particularly relevant to Dow. The scenarios selected were intended to span a range of potential energy futures in terms of global primary energy consumption and energy types. Dow also selected these scenarios to cover a range of assumptions around policy development. The scenarios highlight varying outcomes. For example, in the Sustainable Development scenario, Dow's cost of regulatory compliance is higher than in Regional Rivalry, but our opportunities for the development of low-emissions goods and services and low-carbon technologies are much greater. We utilize these results to build the resiliency of our company as it relates to a variety of outcomes.

The following table shows summary parameters of externally developed scenarios selected to evaluate climate risk/opportunity:

Scenario Descriptions, 2050 Snapshot	Sustainable Development ¹	Regional Rivalry ²
Description	Coordinated path to decarbonization	Uneven path to decarbonization
Market Trends	Increased demand for solutions that mitigate climate change	Slower, regionally driven demand for solutions that mitigate climate change, greater market for climate adaptation products
Temperature Rise	<1.5°C	2.1°C
Carbon Price (USD/metric ton)	135	30
Renewable Energy (% of total primary energy)	47	17

¹ IEA Sustainable Development Scenario

² Regional Rivalry, Shared Socioeconomic Pathway 3.0, RCP6.0

Dow's strategy is resilient to a range of potential outcomes. For example, in 2021, we outlined a clear path to decarbonize our production processes (Scope 1 and 2 GHG emissions) utilizing a phased approach in which end-of-life capacity is replaced with higher-efficiency, lower GHG-emitting assets. This phased approach will enable us to achieve decarbonization in our Scope 1 and 2 GHG emissions in line with a well-below 2°C world, as is envisioned by the Sustainable Development scenario, while mitigating the affordability risk that presents itself should there be a slower global adoption of the regulatory frameworks needed to address climate change, as is the potential under the Regional Rivalry scenario. For Dow's downstream businesses, both scenarios present opportunities to develop solutions related to climate change – whether these are focused on the mitigation of climate change or the products that address climate adaptation. Climate scenarios also are incorporated into our long-term assessments of Dow's manufacturing sites, which is a key input into Dow's capital approval process.

[On resilience]

- **Dow's strategy is resilient to a range of potential outcomes.** For example, in 2021, we outlined a clear path to decarbonize our production processes (Scope 1 and 2 GHG emissions) utilizing a phased approach in which end-of-life capacity is replaced with higher-efficiency, lower GHG-emitting assets. This phased approach will enable us to achieve decarbonization in our Scope 1 and 2 GHG emissions in line with a well-below 2°C world, as is envisioned by the Sustainable Development scenario, while mitigating the affordability risk that presents itself should there be a slower global adoption of the regulatory frameworks needed to address climate change, as is the potential under the Regional Rivalry scenario. For Dow's downstream businesses, both scenarios present opportunities to develop solutions related to climate change – whether these are focused on the mitigation of climate change or the products that address climate adaptation. Climate scenarios also are incorporated into our long-term assessments of Dow's manufacturing sites, which is a key input into Dow's capital approval process.

Source: Dow Chemical Company "2021 ENVIRONMENTAL, SOCIAL & GOVERNANCE REPORT" (<https://corporate.dow.com/content/dam/corp/documents/about/066-00397-01-2021-esg-report.pdf>)

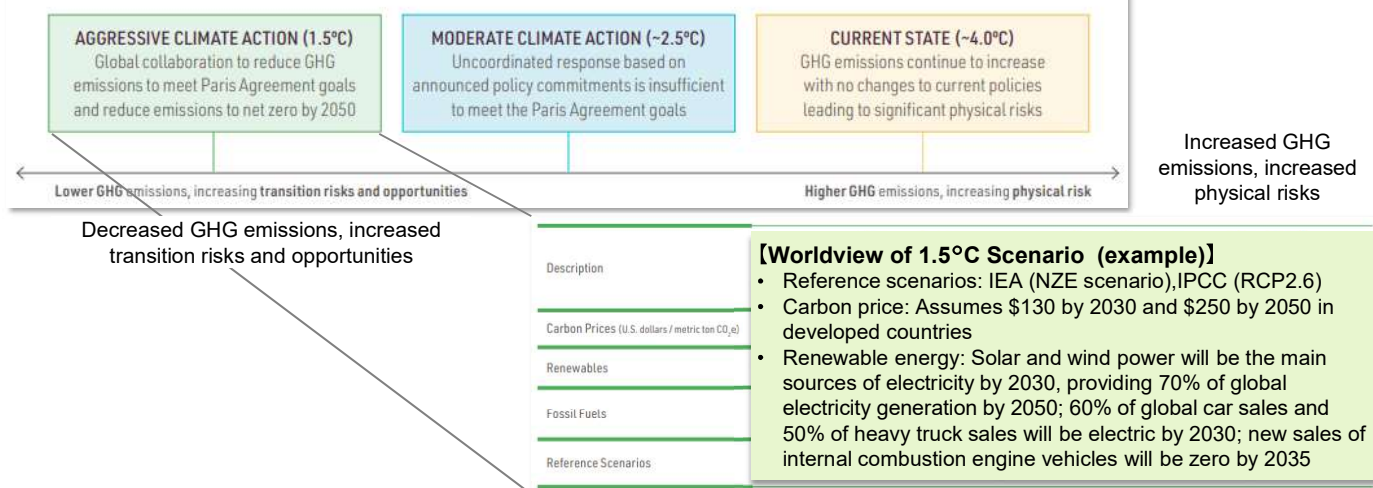
4-64

Detailing an envisioned worldview under three original scenarios, Aggressive Climate Action (1.5°C), Moderate Climate Action (~2.5°C), Current State (~4°C)

- ✓ For transition and physical risks, **original scenarios were developed qualitatively and quantitatively using external market analysis developed by the World Bank and other organizations, as well as the IEA and IPCC (models used in the Fifth Assessment Report)**

SCENARIO SELECTION

We evaluated the key risks and opportunities outlined above across three different climate scenarios: Current State (i.e., mostly unconstrained GHG emissions), Moderate Climate Action (i.e., moderately constrained GHG emissions) and Aggressive Climate Action (i.e., action in line with the Paris Agreement goals of limiting global temperature rise to well below 2°C, preferably to 1.5°C, compared to preindustrial levels). Our scenario analysis was conducted using the prospective time periods of 2030 and 2050 and incorporating a range of business considerations based on third-party GHG emissions trajectory scenarios and their corresponding implications for Freeport. Physical risks were evaluated mainly using data from the Fifth Phase of the Coupled Model Intercomparison Project (CMIP5) which was used in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Our scenario analysis covered our operational and non-operational assets as well as our supply chain.



4-65 Source : Freeport-McMoRan "2020 Climate Report" (<https://fcx.com/sites/fcx/files/documents/sustainability/2020-Climate-Report.pdf>)

Examples of climate change-related responses based on scenario analysis include the introduction of ICP schemes, which are linked to decisions regarding current and future business plans

- ✓ **An Internal Carbon Pricing Program (ICP) system was introduced based on the results of the scenario analysis. The impact on current and future long-term business plans is assessed and incorporated into decision-making.** Committed to continue to review pricing in accordance with external climate change related policies

INTERNAL COST OF CARBON

Freeport operates in some countries and regions with existing carbon pricing policies in place including Chile, the United Kingdom and Europe. The government of Indonesia is also considering carbon pricing initiatives. Depending on the future state of various climate policies and the speed at which the world adopts various policies and initiatives, we recognize that all of our operating regions must prepare for carbon pricing regimes. With the benefit of our global scenario analysis (discussed in more detail in the **Resilience** section), as well as input and ongoing dialogue with external stakeholders and associations, Freeport has established an internal carbon shadow price range between \$50-\$150 per metric ton of CO₂ equivalent. We believe that this price range will provide a key input to our decision-making for both current operations as well as future projects. We are working to integrate this into our business processes to evaluate the potential impacts of an imposed carbon pricing regime on our current operations, longer-term business plans and potential future projects. As a first step, we have begun to integrate the carbon shadow price range into our internal life-of-mine plans. As a next step, we plan to integrate the price range into the evaluations and approval process for projects. We recognize that climate-related policy changes are dynamic and rapidly shifting, and that our pricing assumptions must also be iterative and flexible. Accordingly, we are committed to reviewing our pricing scale periodically so that the range is appropriate and relevant as part of our decision-making factors.

[Introduce Internal Carbon Pricing (ICP)]

- Background :
"Freeport operates in some countries and regions with existing carbon pricing policies in place including Chile, the United Kingdom and Europe. The government of Indonesia is also considering carbon pricing initiatives. Depending on the future state of various climate policies and the speed at which the world adopts various policies and initiatives, we recognize that **all of our operating regions must prepare for carbon pricing regimes**"
- ICP Price :
"With the benefit of our global scenario, as well as input and ongoing dialogue with external stakeholders and associations, **Freeport has established an internal carbon shadow price range between \$50-\$150 per metric ton of CO₂ equivalent.** We believe that this price range will provide a key input to our decision-making for both current operations as well as future projects. **We are working to integrate this into our business processes to evaluate the potential impacts of an imposed carbon pricing regime on our current operations, longer-term business plans and potential future projects**"
- Case study :
"As a first step, **we have begun to integrate the carbon shadow price range into our internal life-of-mine plans. As a next step, we plan to integrate the price range into the evaluations and approval process for projects**"

Freeport has established an internal carbon price range of \$50-\$150 per metric ton of CO₂ equivalent.

4-66 Source : Freeport-McMoRan "2020 Climate Report" (<https://fcx.com/sites/fcx/files/documents/sustainability/2020-Climate-Report.pdf>)

Target to achieve carbon neutrality by 2050, presenting emission reduction targets through 2030 by reducing emission factors and showing reduction pathways through electrification of facilities and energy efficiency

- ✓ It presents a reduction pathway toward decarbonization and mentions the direction of the scenario analysis. Plans to upgrade the analysis related to the five main risks and opportunities identified by the 2021 scenario analysis (regulatory, market, technology, physical risk, and market opportunity)

RESILIENCE

Following the completion of our first global climate scenario analysis in 2021, we plan to further evaluate the key findings related to the five primary risks and opportunities identified in our analysis: regulatory, market, technology and physical risks, and market opportunities. We will work with the relevant sites to educate and integrate the findings from our analysis, which we expect will include integrating relevant risks into our site-level sustainability risk registers and action planning processes. We will also continue working closely with host communities to help support and enhance their resilience to potential physical risks related to climate change. In preparation of our business for future climate scenarios, we will also continue our efforts to integrate our new carbon pricing into our decision-making processes.

CONTRIBUTION

In addition to the importance of copper to global decarbonization, we strive to produce and deliver our products responsibly while working to encourage circular economy frameworks including the reuse and recycling of copper. Over the course of 2022, we plan to continue our work with ICA to develop a global copper decarbonization roadmap and an associated carbon

footprint methodology, which is critical to consistent evaluation of carbon intensity to achieve the Copper Mark at five not a letter of commitment. We plan to continue to help develop a standard for chain of custody product level claims through the value

ASPIRING TOWARDS NET ZERO

Freeport aspires to participate in - and economy. While we fully expect that our and adapt over time as new technologies we believe our current strategy and the identified are foundational to the work to GHG emissions intensity reduction targets future years. Our team is committed to of how we can move beyond our aspirational pathway in future years, and we plan to challenges, opportunities, progress and

[Reduction pathway toward 2050 net zero]

- "In addition to the importance of copper to global decarbonization, we strive to produce and deliver our products responsibly while working to encourage circular economy frameworks including the reuse and recycling of copper. **Over the course of 2022, we plan to continue our work with ICA to develop a global copper decarbonization roadmap and an associated carbon footprint methodology**"
- "While we fully expect that **our climate strategy will need to evolve and adapt over time as new technologies and information become available**, we believe our current strategy **and the decarbonization pathways we have identified are foundational to the work that needs to occur to achieve our 2030 GHG emissions intensity reduction targets and accomplish further reductions in future years**"



4-67 Source : Freeport-McMoRan "2020 Climate Report" (<https://fcx.com/sites/fcx/files/documents/sustainability/2020-Climate-Report.pdf>)

Original scenarios based on IEA STEPS, SDS, and NZE scenarios, detailing a world view based on IEA projections, long-term macroeconomic forecasts, etc.

- ✓ Qualitative and quantitative worldview to 2050 based on current business and project portfolios
- ✓ Seven variables (carbon price, gold price, oil price, electricity, renewable energy, transportation, energy sector policies, grid emission factors, global GDP, and global population) are used to illustrate the scenario worldview

Scenario framework

1	2	3
Transitional Change	Planned Energy Transition	Accelerated Response
Reliance on fossil fuels with greater than 3°C temperature rise	Limit global warming to well below 2°C	Limit global warming to 1.5°C
<ul style="list-style-type: none"> Consistent with IEA's <u>Stated Policies Scenario</u> Results in a shortfall in meeting the goals of the Paris Agreement 	<ul style="list-style-type: none"> Most consistent with IEA's <u>Sustainable Development Scenario</u> Phased actions during the 2020s to limit global warming to well below 2°C 	<ul style="list-style-type: none"> Most consistent with the IEAs <u>Net Zero Emissions by 2050 Scenario</u> Accelerated actions prior to 2030 to limit global warming to 1.5°C

Each scenario is respectively consistent with IEA's STEPS, SDS, and NZE scenario
 Scenario1: IEA's STEPS scenario
 Scenario2: IEA's SDS scenario
 Scenario3: IEA's NZE scenario

Key assumptions for Newmont's climate scenarios¹

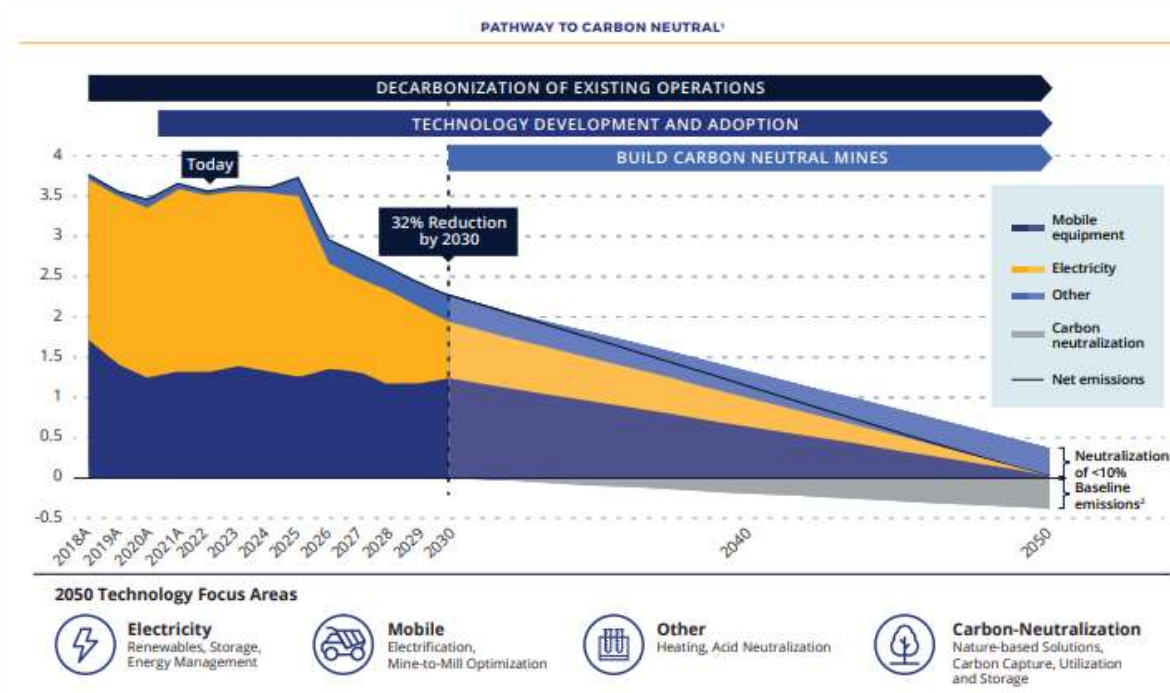
Macroeconomics ²	Climate Scenarios
Gold price (\$/oz) - \$1,500 Silver price (\$/oz) - \$23 Copper (\$/lb) - \$3.25 USD/AUD - \$0.75 MXN/USD - \$21.0 USD/CAD - \$0.80	Scenario One: Transitional Change Scenario Two: Planned Energy Transition Scenario Three: Accelerated Response

Mineral prices based on macroeconomic forecasts

1	Scenario One assumptions ^{1, 2, 3}
Variables	Scenario One assumptions
External	
Carbon price ⁴	\$40/tCO ₂ by 2030, increasing up to \$50/tCO ₂ by 2050
Gold price ⁵	\$1,500/ounce
Fossil	
Worldview of Scenario 1 (example)	
	<ul style="list-style-type: none"> Carbon Price : 40\$/tCO₂ in 2030, rising to 50\$/tCO₂ in 2050 Gold price: \$1,500/oz Fossil fuel price <ul style="list-style-type: none"> Crude oil: \$77/bbl in 2020, rising to \$88/bbl in 2050 Natural gas: \$7.7/Mbtu in 2020, \$8.3/Mbtu in 2050 (based on EU costs) General coal: \$67/ton in 2020, \$63/ton in 2050
World GDP⁶	3% compound average annual growth rate between 2020-2050
World population⁴	Over nine billion in 2040 with a compound average growth rate of 0.7%

Goal to achieve carbon neutrality by 2050, with a transition pathway

- ✓ Plans to **focus first on deploying commercially available technologies** to decarbonize existing operations Collaborate with joint venture partners on technology development strategies and timelines and **develop a technology roadmap for capital projects to identify new technologies that will help build carbon neutral mines and redefine the project pipeline to be carbon neutral**



Source : Newmont Corporation "2021 Climate Report" (https://s24.q4cdn.com/382246808/files/doc_downloads/sustainability/2021-report/2021-Climate-Report.pdf)

4-69

For each risks and opportunities in the 1.5°C scenario and 4°C scenario, disclosed the revenue impact with and without mitigation actions

- ✓ **Disclosed the revenue impact with and without mitigation actions for the 2030 and 2050 1.5°C/4°C scenario, while explaining the calculation methods**
 - Example : Impact on the changes in consumer preferences away from higher GHG emission animal protein for the 1.5°C scenario
 - Without mitigation actions : At 2030 300 to 350 million euro of revenue loss can be expected
 - With mitigation actions : Overall opportunity for business

Quantitative scenario analysis – Potential financial impact of climate-related transition risks on MFP products in a low emissions scenario in 2030

To assess the costs associated with carbon taxes and changes in consumer preferences, we evaluated the production of MFP products in the UK and the production of animal feed globally. Our analysis considered the impacts of a carbon price on the cost of MFP products by factoring in the emissions associated with production and in our supply chain. The carbon prices applied in our scenario analysis align with IPCC data. We considered how prices of MFP products could subsequently increase and assumed that additional costs would be passed on directly to the consumer, further reducing demand. The analysis assumed that products associated with the highest emissions would be most avoided by consumers.

The results illustrate a potential revenue loss when looking at the MFP category in isolation in a 1.5°C (low emissions) world in which physical risks associated with climate change are limited but high transition risks are experienced as the world attempts to meet the Paris Agreement. However, this looks at the MFP product category in isolation and assumes no actions are taken to mitigate risks, so does not capture the overall opportunity at Group level of developing and promoting lower GHG animal protein and nutritionally positive meat alternatives to capture switching calories from existing and new customers.

Most material climate risks impacting MFP ¹	Annual revenue loss to MFP category in isolation in 1.5°C scenario, assuming no actions are taken to mitigate risks	Annual revenue loss/opportunity at Group level in 2030 in 1.5°C scenario, assuming actions are taken to mitigate risks	Potential mitigations that are being considered as part of our strategic planning
Changes in consumer preferences away from higher GHG emission animal protein	£300m to £350m revenue loss to MFP category in isolation	Overall opportunity for business	<ul style="list-style-type: none"> — Differentiate: develop lower GHG emission animal protein within existing product (see integrated beef case study below) — Shift customer behaviour: towards lower GHG emission meat proteins and products — Alternatives: promotion of nutritionally positive meat alternatives to capture switching calories from existing and new customers
Implementation of carbon taxes	£50m to £100m revenue loss to MFP category in isolation	Overall opportunity for business	<ul style="list-style-type: none"> — Reduce: work with suppliers to reduce GHG emissions in our supply chains e.g. supplier targets, animal health & welfare and feed efficiency — Offset: work with suppliers to sequester carbon in our supply chains e.g. planting trees, creating hedgerows, and protecting peat land and mangroves — Innovate: investment in innovation to further reduce GHG emissions e.g. methane reducing food additives

¹ Risks should be considered in isolation as the complex interrelationship between multiple risks has not been considered.

Source : J Sainsbury Plc "Annual Report and Financial Statements 2022" (<https://www.about.sainsbury.co.uk/-/mediaFiles/S/Sainsbury/documents/reports-and-presentations/annual-reports/sainsbury-ar2022.pdf>)

4-70

Analyzed the business impact on EBITDA for each risk and opportunity



- ✓ For each risk and opportunity, the financial impact is disclosed as **EBITDA**, time frames, and scenario sensitivity

Risks/Opportunities

- Physical risks
 - South African plantation yield loss
 - Chronic changes in precipitation
 - Higher wood procurement costs
 - Risks of flooding
 - Transition risks
 - GHG regulatory changes
- (net impact)
- Energy supply costs
 - Changing customer behavior
- Opportunity
- Sales of by-products
 - Reduced operating costs through energy efficiency
 - Changing customer behavior

Risk	Risk description	How we manage and mitigate this risk	Estimated financial impact (€m)
1. South African plantation yield loss	Increased severity and frequency of extreme weather events may result in disruptions and decreased harvesting capacity of our managed plantation forests in South Africa. Extreme weather conditions may impact plantations through sustained higher temperatures, which can lead to stronger winds and increased windfalls. Plantations may be vulnerable to changes in rainfall patterns and erosion. Higher temperatures may increase vulnerability of trees to pests and diseases. Fire remains a challenge for our South African plantations, exacerbated in years when drought conditions occur.	Our tree improvement programme aims to produce stronger, more robust hybrids that can resist disturbances such as drought, pests and diseases. We mitigate fire risks with naturally vegetated open corridors acting as fire-breaks between forest plantations, investment in a fire fighting fleet and efficient logging site management. We have improved pre- and post-burning assessments at harvesting sites which aim to mitigate the risks of erosion and nutrient loss after prescribed burning to ensure healthy soils, which are critical for productive plantation forests.	15-20
Timeframe: Medium-term			

- ✓ For each risks and opportunities effect on the company, a mitigation plan is discussed

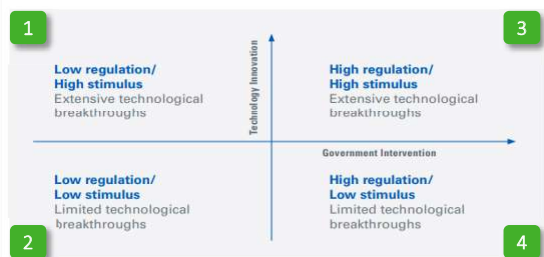
Source : Mondi Group "Integrated report and financial statements 2021" (<https://www.mondigroup.com/media/15141/mondi-group-integrated-report-blackpluswhite-version-2021.pdf>)

4-71

Original scenarios, including 1.5°C, are established with reference to external data from the IEA, IPCC, and other sources. Each scenario details a world view of external technology trends and government regulations

- ✓ Based on IEA SDS and NZE scenarios, 4 original scenarios are set according to external technological trends and degree of regulation
- ✓ Each scenario provides a detailed worldview of "Regulations and Policies," "Technology Trends," "Social and Political Background," "Economy," "Energy Prices," and "Business Environment"

1.5°C scenario planning



- Companies with leading low-carbon technologies are the prime actors of decarbonization. Unprecedented industrial breakthroughs in automation, virtual reality, and artificial intelligence spur economic growth and urbanization
- Individuals and businesses mobilize to take climate action characterized by local initiatives around reduced consumption. Home and community-based sustainability solutions gain in popularity with consumers, and long-distance commuting and car ownership are no longer central to daily living
- Governments take strong policy action to reach net zero pledges, including carbon pricing and increased incentives for technology innovation. Businesses invest in high technology solutions and increased electrification, following the lead of government mandates that dictate standards for vehicles and industrial processes
- Strong government intervention in energy markets is adopted to promote decarbonization. Carbon pricing and high energy costs lead to social unrest and political leaders respond with new labor laws and guaranteed income programs

Scenario 1

External forces	Indicators
Regulation	
Technology	
Social and political	
Economy	
Energy	
Business	

[Worldview of Scenario 1 (example)]

- Regulation/policies
 - Strong government market intervention is limited because of voter unpopularity
- Technology trends
 - Consumer digital technologies increase
 - Exponential gains in virtual reality, smart devices, robots
 - Widespread buildout of 5G New low-carbon bio-based and hydrogen aviation fuels are introduced
 - 3D printing and additive manufacturing widely adopted with new, more sustainable materials
- Social and political context
 - Younger generation remains technology-oriented
 - Income inequality grows due to widening digital divide
 - High connectivity in social movements with crowdsourced production development
 - Community initiatives in cities produce cooperative sustainability amenities: urban gardens, vehicle sharing and community solar
- Economy
 - GDP rising
 - Cashless commerce and rise in use of blockchain

4-72 Source : Eaton "2022 TCFD Report" (<https://www.eaton.com/content/dam/eaton/company/sustainability/files/eaton-tcfd-disclosure.pdf>)

Based on the scenario analysis, specific measures to contribute to increasing corporate value by reducing climate change-related risks and capturing opportunities are integrated with the business strategy

- ✓ **Describes specific measures to address both reducing energy demand and greening energy supply to reduce climate-related risks and capture opportunities**

Mitigating climate-related transition risks

The energy transition to the challenge of has systematically preferences, and c business. A key risk development and Eaton has invested Positive Impact Framework and 2030 in R&D to reduce emissions incorporation of both on- and off-grid

[Mitigation of transition risks associated with climate change]

- **Eaton has invested \$528 million in research and development in alignment with our Positive Impact Framework. Eaton has committed to investing \$3 billion between 2020 and 2030 in R&D dedicated to more sustainable solutions, including products that reduce emissions and enable electrification and grid management, which will aid greater incorporation of both on- and off-grid**

[Acquisitions and divestments—financial planning]

- **Climate transition opportunities position Eaton to deliver an incremental 8-10% EPS growth over the next five years**
 - Green Motion: In March 2021, Eaton acquired Green Motion SA, a leading designer and manufacturer of electric vehicle charging hardware and related software. **This acquisition complements existing energy storage and power distribution offerings, and positions Eaton to grow with the global energy transition to electric vehicles**
 - Reactive Technologies: In August 2021, **Eaton made a strategic investment** in the UK and Finland-based grid technology company, Reactive Technologies Ltd. Eaton is collaborating with Reactive on supporting utilities to cost-effectively increase renewable energy capacity

- ✓ **Results of scenario analysis are integrated into financial planning, including investments and acquisitions**

Acquisitions and divestments—financial planning

Eaton is actively managing its portfolio and expects to deliver higher margins and more consistent earnings supported by secular growth trends: sustainability, intelligent and connected products, and electrification and energy transition. Climate transition opportunities position Eaton to deliver an incremental 8-10% EPS growth over the next five years.

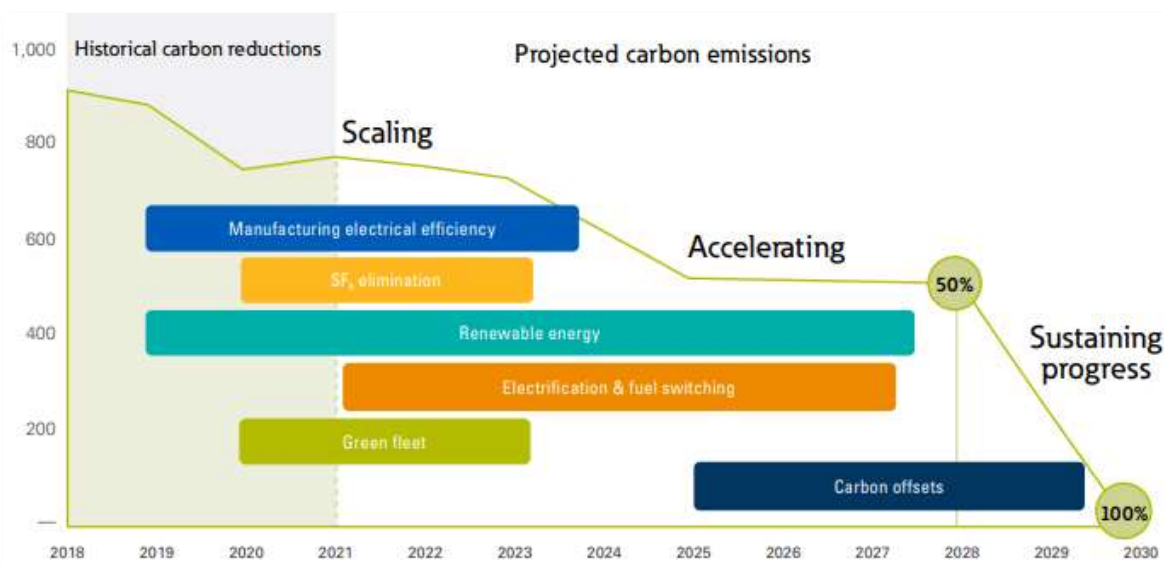
Recent acquisitions deployed capital in businesses poised to respond to these opportunities:

- **Innovative Switchgear and Ulusoy Elektrik:** In 2019 Eaton acquired Innovative Switchgear, and a 93.7% controlling interest in Ulusoy Elektrik, to expand Eaton's offerings in medium voltage switchgear and other equipment for utility customers, including more environmentally-friendly SF₆-free solutions.
- **Souriau-Sunbank:** Eaton acquired Souriau-Sunbank Connection Technologies in 2019 to enhance offerings of highly engineered electrical interconnect solutions for harsh environments in the aerospace, defense, industrial, energy and transport industries. Harsh environments will be more frequent as customers mitigate climate risks, making harsh environment solutions more important in the future.
- **Tripp Lite:** Eaton's March 2021 acquisition of Tripp Lite expands and strengthens Eaton's single-phase, uninterruptible power supply system and data center solutions, product lines that support growing demand for reliability, edge computing, and distributed information technology in the face of increased energy challenges.
- **Green Motion:** In March 2021, Eaton acquired Green Motion SA, a leading designer and manufacturer of electric vehicle charging hardware and related software. This acquisition complements existing energy storage and power distribution offerings, and positions Eaton to grow with the global energy transition to electric vehicles.

4-73 Source : Eaton "2022 TCFD Report" (<https://www.eaton.com/content/dam/eaton/company/sustainability/files/eaton-tcfcd-disclosure.pdf>)

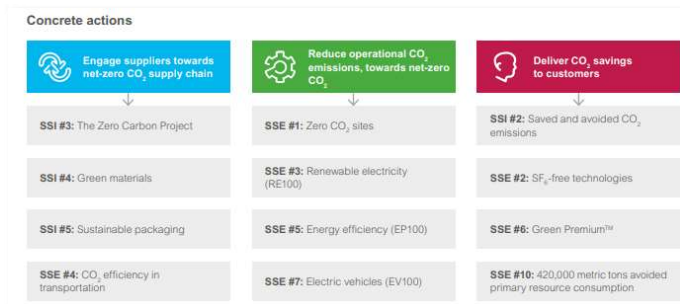
Transition plan shown with the goal of achieving carbon neutrality by 2030

- ✓ **Demonstrate plans to achieve carbon neutrality** through manufacturing efficiencies, implementation of alternative solutions, renewable energy, green fleet (deploy electric vehicles, charging infrastructure, and more efficient vehicles in sales, service, and other operations fleets), electrification and fuel switching (switch to sustainable fuel sources whenever possible, and if difficult, electrify processes with renewable energy), carbon offsets, etc. process electrification), and carbon offsets to achieve carbon neutrality
- ✓ **The future of scenario analysis is also mentioned:** "As climate science and the global response to climate change mitigation and adaptation are rapidly evolving, **scenario analysis will be conducted regularly at 2–3-year intervals**



4-74 Source : Eaton "2022 TCFD Report" (<https://www.eaton.com/content/dam/eaton/company/sustainability/files/eaton-tcfcd-disclosure.pdf>)

A roadmap toward 2050 consistent with 1.5°C scenario and detailed mitigation actions are disclosed

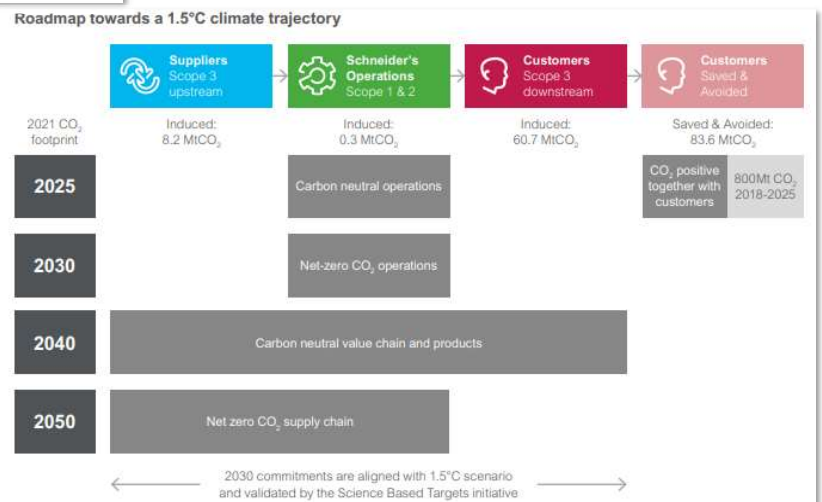


✓ A roadmap consistent with 1.5°C scenario and mitigation actions are disclosed

- 2025 : Carbon Neutral Operation
- 2030 : Net zero CO₂ Operations
- 2040 : Carbon neutral value chain and products
- 2050 : Net zero CO₂ supply chain

[Strategy]

- Reach 150 Zero-CO₂ sites by 2025
- Propose alternative technologies by 2025
- Source 90% of electricity from renewables by 2025 and 100% by 2030
- Increase energy efficiency in sites by 15% by 2025
- Shift 1/3rd of corporate vehicle fleet to electrical vehicles by 2025 and 100% by 2030



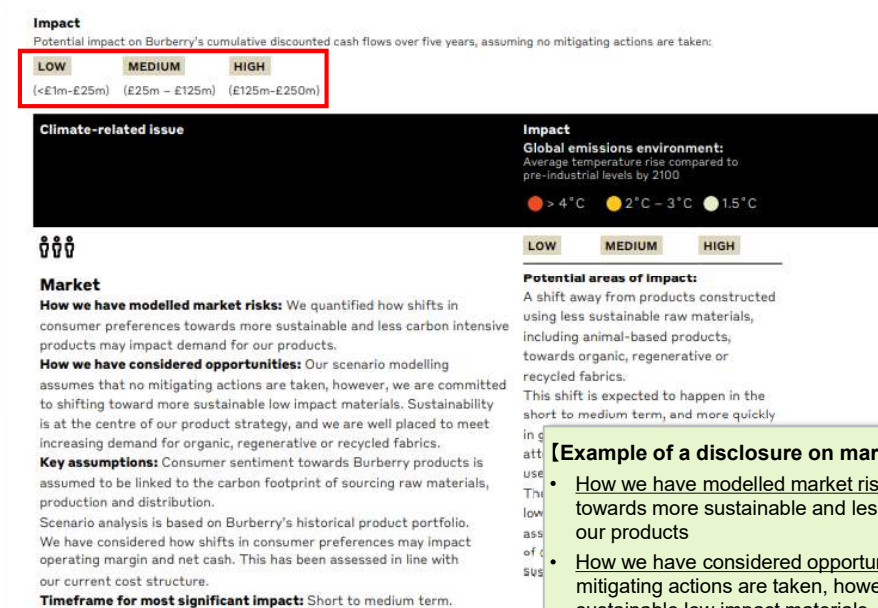
Source : Schneider Electric "2021 Universal Registration Document Financial and Sustainable Development Report"

(<https://www.se.com/ww/en/assets/564/document/319364/2021-universal-registration-document.pdf>)

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[Overseas Disclosure Examples: Burberry Group PLC (United Kingdom, Consumer Discretionary, Pharmaceutical)]

Analyzed the business impact for >4°C, 2°C-3°C, 1.5°C Scenarios



✓ Expresses the revenue impact of the risks as **low, medium, high**

- Low : <1m-25m Euro
- Medium : 25-125m Euro
- High : 125m-250m Euro

✓ For the following significant risks, the **financial impact in the >4°C, 2°C-3°C, 1.5°C scenario** are disclosed

- Physical risk
- Policy changes
- Market changes
- Reputation changes
- Liability

[Example of a disclosure on market risks]

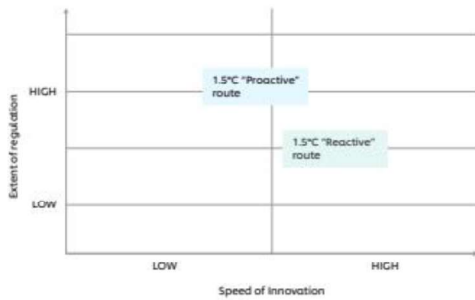
- **How we have modelled market risks :** We quantified how shifts in consumer preferences towards more sustainable and less carbon intensive products may impact demand for our products
- **How we have considered opportunities :** Our scenario modelling assumes that no mitigating actions are taken, however, we are committed to shifting toward more sustainable low impact materials. Sustainability is at the center of our product strategy, and we are well placed to meet increasing demand for organic, regenerative or recycled fabrics.
- **Key assumptions :** Consumer sentiment towards Burberry products is assumed to be linked to the carbon footprint of sourcing raw materials, production and distribution. **Scenario analysis is based on Burberry's historical product portfolio. We have considered how shifts in consumer preferences may impact operating margin and net cash. This has been assessed in line with our current cost structure.**

Source : Burberry Group PLC "Annual Report 2021/22" (https://www.burberrypc.com/content/dam/burberry/corporate/oar/2022/pdfs/Burberry_2021-22_Annual_Report.pdf)

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Conducted a 1.5°C, 2°C, 4°C scenario analysis, with 2 unique scenarios for 1.5°C. Also disclosed the business impact for 2030, 2039, 2050

Pathways to 1.5°C: Proactive and Reactive



✓ Conducted a 1.5°C, 2°C, 4°C scenario analysis, and utilized 2 unique scenarios for 1.5°C

- In the **Proactive Route**, regulations become aggressive and persistent from today and will be relying on available and proven technologies
- In the **Reactive Route**, there will be a gradual regulation by 2030 and becomes very aggressive post-2030. There will be a major reliance on technologies that are not yet proven to scale

✓ For the main 1.5°C scenario's risks and opportunities, the business impact for 2030, 2039, 2050 are analyzed and the calculation method/assumptions are disclosed

- Main risks and opportunities :
 - Carbon tax and voluntary carbon removal costs
 - Land use regulation impact on food crop outputs
 - Impact of rising energy prices for suppliers and in manufacturing
 - Water scarcity impact on crop yields
 - Extreme weather (temperature) impact on crop yields
 - Growth in plant-based foods category

1.5°C scenario analysis financial quantification in current money

Financial quantification of the increased regulatory and market risks				Key assumptions:
Risk	2030	2039	2050	
Carbon tax and voluntary carbon removal costs We quantified how high prices from carbon regulations and voluntary offset markets for our upstream Scope 3 emissions might impact our raw and packaging materials costs, our distribution costs and the neutralisation of our residual emissions post 2039.	-€3.2bn to -€2.4bn	-€5.2bn to -€4.8bn	-€6.1bn	<ul style="list-style-type: none"> Absolute zero Scope 1 and 2 emissions by 2030 Scope 3 emissions exclude consumer use emissions Carbon price would reach 245 USD/tonne by 2050, rising more aggressively in early years in a proactive scenario The price of carbon offsetting would reach 65 USD/tonne by 2050 Offsetting 100% of emissions on and after 2039
Land use regulation impact on food crop outputs We quantified how changing land use regulation to promote the conversion of current and future food crops to forests could drive reduced crop output and lead to increased raw material prices, impacting sourcing costs.	-€0.8bn to -€0.3bn	-€2.1bn to -€0.7bn	-€5.1bn to -€1.7bn	

Proactive route	Reactive route
<ul style="list-style-type: none"> Aggressive and persistent regulation from today Dramatic changes to lifestyle from today, towards minimising climate impact and social inequality Reliance on available and proven technologies Lower reliance on carbon removal technologies 	<ul style="list-style-type: none"> Gradual regulation by 2030, very aggressive post-2030 Continuation of historical societal trends until 2030, then rapid pivot Major reliance on technologies that are not yet proven to scale Higher reliance on carbon removal technologies

Source : Unilever "Annual Report and Accounts 2021"

(<https://www.unilever.com/files/92ui5eqz/production/e582e46a7f7170fd10be32cf65113b738f19f0c2.pdf>)