
Disclosures Based on the TCFD Recommendations

June 2022

LIXIL

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Introduction: LIXIL's Corporate Responsibility and Environmental Strategies

At LIXIL, our business operations are not only supporting our corporate growth and sustainable value creation, but also enhancing the positive impact that we have on the environment and society. This goes beyond meeting our ESG obligations, by ensuring we are truly living our purpose to make better homes a reality for everyone, everywhere. Transforming how we approach environmental issues is a critical part of how we are transforming for impact. Our environmental strategy consists of three pillars: "Climate Change Mitigation and Adaptation," "Water Sustainability," and "Circular Economy." The transition to a net-zero economy is the critical challenge of our times. Like all companies, we are working to reduce the environmental burden from our operations. At the same time, however, our strategy is to reduce CO₂ emissions for society as a whole, not only for LIXIL. We are making progress across the pillars of our environmental strategy to conserve water, energy, and other natural resources utilized in and by LIXIL products and services across the value chain from procurement through production, distribution, end use, and product disposal.

We have identified "Water Conservation and Environmental Sustainability" as one of our strategic pillars of our Corporate Responsibility (CR) Strategy and have positioned the following five issues as priorities.

- (1) Climate change mitigation and adaptation
- (2) Water sustainability
- (3) Circular economy
- (4) Environmental impact of product lifecycle
- (5) Environmental management

LIXIL Environmental Vision 2050, announced in FYE2020, calls for "Zero Carbon and Circular Living" and defines (1), (2), and (3) above as focus areas for achieving the vision. As a foundation for promoting these focus areas, we are also working to reduce environmental impact throughout product lifecycles (4) and to strengthen our company-wide environmental management (5). By 2050, we aim to achieve net-zero carbon emissions and preserve water and natural resources for future generations through operations and our housing and lifestyle solutions to become a leading company in environmental sustainability.



CLIMATE CHANGE MITIGATION AND ADAPTATION

Achieve Net-Zero GHG Emissions through Our Business Operations, Products and Services



WATER SUSTAINABILITY

Enhance the Environmental Value of Water Resources by Saving, Circulating and Purifying Water



CIRCULAR ECONOMY

Help Transition to a Circular Economy and Preserve Natural Resources for Future Generations

For more information: [Water Conservation and Environmental Sustainability](#) 

* "2030" and "2050" in this document refers to our fiscal year, starting in 2030 or 2050.

Disclosures Based on the TCFD Recommendations

In March 2019, LIXIL announced our endorsement of the Task Force on Climate-related Financial Disclosures (TCFD) in connection with our focus area "climate change mitigation and adaptation." Based on the TCFD recommendations, LIXIL is working to identify and assess the risks and opportunities posed by climate change, and reflecting them in our environmental strategy after reporting to and approval by the Board of Executive Officers and Board of Directors.

1. Governance

a. Board's Oversight

At LIXIL, we are transforming our business operations. This transformation is not only to secure corporate growth and sustainable value creation, but also to enhance the positive impact that we have on society and the environment. It is important that we also have the right governance structure in place to track progress and monitor risks, targets, and metrics for our transformation for impact. We have established the Environmental Strategy Committee (ESC) chaired by the Chief Technology Officer (CTO) in charge, designated by the Board of Executives, as well as a sustainability governance framework with overall oversight by the Board of Directors. The ESC meets at least once a quarter to develop and implement environmental strategies. This includes formulating rules and policies related to environmental governance, deliberating and making decisions on measures to address climate risks and opportunities and other environmental issues, and managing and monitoring environmental targets for the group as a whole. The results of ESC discussions and deliberations are reported to the Corporate Responsibility (CR) Committee. Decisions on matters of significance or special importance are elevated to the Board of Executive Officers for discussions and approval, followed by the elevation to the Board of Directors for discussions and oversight.

The CR Committee meets quarterly to identify and review key sustainability issues, including environmental issues, for the entire group, formulate CR Strategy targets and measures, and monitor and support the implementation of priority initiatives and specific activities.

The execution of sustainability initiatives is reported and reviewed with the Board of Directors twice annually. In addition, when decisions on matters of significance or special importance are made by the Board of Executives, updates may be reported as necessary as part of regular reporting to the Board of Directors by Executive Officers.



Environmental management structure

b. Roles and Responsibilities of Directors and Executive Officers

Currently, the Board of Executive Officers appoints a chairperson to each committee as follows.

Committee	Chairperson
Environmental Strategy Committee	Chief Technology Officer (CTO)
Corporate Responsibility Committee	Director, Executive Officer, Executive Vice President, Human Resources and General Affairs, Public Affairs, Investor Relations, External Affairs, and Corporate Responsibility, and Chief People Officer (CPO)

Each chairperson is responsible for implementing the decisions made in their committee and managing progress. More specific business plans are then implemented and monitored by the executive officers in charge of individual business organizations. The representative executive officer, President, and Chief Executive Officer (CEO) is ultimately responsible for management decisions related to environmental issues, including risks and opportunities arising from climate change, through discussions and resolutions of the Board of Executive Officers and their oversight by the Board of Directors.

For more information: [Environmental Management System](#)  [Corporate Governance Structure](#) 

2. Strategy

a. Identifying Climate-related Risks and Opportunities

LIXIL has conducted scenario analyses to identify the risks and opportunities posed by climate change that could significantly impact our business over the short, medium, and long terms as shown below. Risks and opportunities were categorized into transition risks (e.g., policy and legal, and market) and physical risks (e.g., extreme weather events) that could affect our value chain.

Classification	Period	Background
Long-term	10 - 30 years	Period ending with the 2050 goal to realize LIXIL Environmental Vision 2050
Medium-term	3 - 10 years	Period ending in 2030, a target year of the Science Based Targets initiative and the SDGs. A critical milestone for realizing LIXIL Environmental Vision 2050
Short-term	0 - 3 years	Period ending in 2025, when environmental initiatives will be promoted in alignment with business plans

Our scenario analysis is based on the following two scenarios, selected from several scenarios published by the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC).

Scenario Name	Scenario Overview	Source
1.5°C scenario* ¹	<p>Scenario with significant policy transition impacts that aligns with the Paris Agreement's goal of limiting temperature rise to 1.5°C above pre-industrial levels</p> <p>Environmental regulations will be tightened and the introduction of carbon taxes and other taxes will cause energy and raw material prices to rise. Energy regulations and expanded subsidy programs will increase the share of Net-Zero Energy Houses (ZEH) among new houses in Japan and will also stimulate remodeling to improve existing housing performance. The impact of this will be an increased demand for products and services that provide high thermal insulation and energy efficiency and generation.</p>	<p>RCP2.6</p> <p>IEA SDS</p> <p>IEA NZE</p> <p>RCP4.5</p> <p>NDCs</p>
4°C scenario	<p>Scenario where environmental regulations are not tightened and physical impacts are large</p> <p>Environmental regulations will not be tightened, energy efficiency-related subsidies will not be expanded, and the percentage of ZEH will not significantly increase. Physical risks such as damage to manufacturing facilities caused by typhoons, floods, and other extreme weather events will increase. Demand for products and services related to disaster preparation, response, and recovery will increase.</p>	<p>RCP8.5</p>

*1 Parameters based on the 2°C scenario were used when parameters based on the 1.5°C scenario were not available.

b. Impact of Risks and Opportunities Identified in the Scenario Analysis

The following table outlines the risks and opportunities identified in the two scenarios described above that we expect will significantly impact our business. We quantified the financial impact of these risks and opportunities to our business in 2030 to the greatest extent possible.

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.

c. Strategic Response to Risks and Opportunities

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.

Key risks and opportunities	Strategic response
<p>1</p> <p>Increased operating costs due to introduction of carbon taxes</p>	<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>
<p>2</p> <p>Increased raw material and component procurement costs due to market changes</p>	<p>To reduce CO₂ emissions from procurement of raw materials and components, we are switching to low-carbon raw materials and components such as aluminum scraps collected from outside our manufacturing process, making products thinner, and reducing the number of components per product.</p> <p>Going forward, in addition to working with suppliers to ensure a stable and responsible supply of products, we will strengthen our collaboration with them to reduce CO₂ emissions.</p> <p>For more information: Circular Economy > Business Operations: Circulating Resources, Working with Stakeholders to Eliminate Industrial Landfill Waste  Responsible Supply Chain Management > Conducting and Following Up on Responsible Procurement Survey </p>
<p>3</p> <p>Loss of revenue opportunities due to damage to the company's plants caused by typhoons, floods, etc.</p>	<p>Anticipating major natural disasters as a risk to our business, we are carrying out business continuity planning (BCP) activities to minimize disaster risks at each factory based on estimated damages in all areas where our headquarters, offices, and factories are located. For example, TOSTEM THAI plant experienced heavy damage from flooding in 2011. As part of the BCP process for improving the disaster preparedness, the plant has built floodwalls on its perimeter and installed water pumps and other equipment to protect production facilities and shorten recovery time. We are carrying out systematic facility investments and upgrades at other factories as well.</p> <p>As measures related to product supply, we are optimizing supplier selection, ensuring optimal inventory levels, and developing backup production systems, for example. We are also enrolled in insurance programs that cover fixed assets owned, used, or managed by LIXIL and its consolidated subsidiaries in Japan in the event of an unexpected and sudden disaster caused by fire, wind, or water.</p>
<p>4</p> <p>Increased demand for energy-saving products and services for new ZEH construction and energy-efficiency remodeling</p>	<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 reinsulating 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>

Key risks and opportunities	Strategic response
<p>5</p> <p>Increased demand for products that use low-carbon, eco-conscious materials or resources</p>	<p>We are responding to rising prices for raw materials and components that generate a large amount of carbon emissions during procurement and production stages, stronger regulations on fossil-derived plastics, changing consumer preferences arising from the emergence of circular economy, and other market changes, we are using recycled materials as much as possible and designing products that take a longer product lifespan and recyclability into account.</p> <p>We are developing and marketing products and services that provide new options and broaden consumer choices for sustainable living, from resin window frames that have roughly three times the recycled content as conventional products, to artificial wood deck that uses recycled plastic and recycled wood dust, to Cradle to Cradle Certified® GROHE brand faucets, to kitchen faucets that can be upgraded after purchase by simply replacing the spout with one that has a built-in water filter.</p> <p>For more information: Circular Economy > Products and Services: Saving and Recycling Resources  Plastics Action Statement </p>
<p>6</p> <p>Increased demand for products related to disaster preparation, response, and recovery</p>	<p>LIXIL is developing and marketing products that contribute to climate adaptation to address the increasing frequency of natural disasters such as typhoons and torrential rains and higher rates of heatstroke from rising temperatures. Such products include easy-to-install storm shutters that protect windows from high winds and flying debris during a typhoon, Style Shade sun blinds that block strong sunlight on window exteriors, and <i>Resilience Toilet</i>, a public toilet whose water consumption can be switched from five liters to one liter per flush during water supply disruptions. We are also promoting initiatives such as THINK HEAT, in which together with stakeholders, we explore the importance of indoor temperature, which can cause heatstroke or heat shock, and the efficient use of heaters and air conditioners; and a disaster mitigation project to build homes that protect families from disasters.</p> <p>For more information: Climate Change Mitigation and Adaptation > Products & Services: Conserving Energy and Reducing Greenhouse Gas Emissions  Stakeholder Engagement > THINK HEAT  Disaster Mitigation Project: Build Homes That Protect Families (Japanese only) </p>

3. Risk Management

a. Processes for Identifying and Assessing Climate-related Risks

LIXIL identifies significant climate-related risks and opportunities and assesses their impact by conducting scenario analyses based on the TCFD recommendations under the direction of the Environmental Strategy Committee (ESC). In this process, climate-related transition risks and physical risks are linked to business risk categories (strategic risks and operational risks) and prioritized based on group-wide risk assessment criteria (degree of impact on business planning and possibility of occurrence), taking into account the differences in the size of group businesses, changes in their external conditions, and inter-relationships among risks from business management perspectives.

b. Processes for Managing Climate-related Risks

LIXIL makes continuous improvements to our management of business risks by evaluating the relative importance of each risk and planning, implementing and monitoring measures to address such risks at every level of our organization. For climate-related transition risks and opportunities in particular, we are developing processes to integrate such risks and opportunities into our environmental strategy, cascade them down to environmental targets and action plans, implement and promote measures to improve environmental performance and manage risks, and monitor and review progress.

c. Integrating These Processes into Overall Risk Management

We are integrating these processes into overall risk management of the entire group by linking climate-related transition risks

and physical risks to the strategic risk and operational risk categories of our business risks. We regularly monitor strategic and operational risks and implement risk mitigation measures at every level of the business. Moreover, members of the Audit Committee monitor whether effective measures are being taken to address high-priority risks through their participation in meetings of the Board of Directors and various other committees.

For more information: [Management Strategy & Structure > Business Risks](#)  [Corporate Governance > Risk Management](#) 

4. Metrics and Targets

a. Metrics and Targets Used to Assess Climate-related Risks and Opportunities

The LIXIL Environmental Vision "Zero Carbon and Circular Living" expresses our commitment to achieve net-zero carbon emissions from our operations, products and services by 2050. We are upgrading our 2030 emissions reduction targets, our medium-term targets in the Environmental Vision, to be consistent with the Science Based Targets initiative's (SBTi) new ambition level of 1.5°C*. We are committed to reducing our CO₂ emissions to -50% in absolute CO₂ emissions in Scope 1+2 and Scope 3 emissions by 30% by 2030 from FYE2019, and plan to renew SBT validation for these targets.

* Updated Scope 3 target is based on well-below 2 °C level.

Meanwhile, decarbonization will require a rapid shift toward high-performance, energy-efficient homes, and this need presents a business opportunity. We have set the sales ratio of high-performance windows and water-saving faucets and toilets, which are not included in our SBTi validation, as metrics for assessing climate-related opportunities. Set for our Japanese business as a priority, these targets will allow us to expand our lineup of eco-conscious products that help reduce energy and water use in homes and buildings, thereby future-proofing the growth of our business.

Metrics used to assess climate-related risk and opportunities		Targets
Risks	Scope 1 and 2 carbon emissions	Reduce by 50% by fiscal year ending March 2031 (vs. FYE2019)
	Scope 3* carbon emissions	Reduce by 30% by fiscal year ending March 2031 (vs. FYE2019)
	Scope 1, 2, and 3 carbon emissions	Net zero by fiscal year ending March 2051
Opportunities	Ratio of number of high-performance windows sold for detached houses (Japan)	100% by fiscal year ending March 2026
	Ratio of number of energy and water-saving faucets and water-saving toilets sold (Japan)	100% by fiscal year ending March 2031

* Excluding use-phase emissions from products that indirectly consume energy such as hot water supply during use

For more information: [CR Report > Highlights in the Environment chapter](#) 

b. Scope 1, 2, and 3 carbon emissions

c. Results of metrics used to assess climate-related risks and opportunities

We have obtained third-party verification of our Scope 1, Scope 2, and material Scope 3 emissions. We also disclose our targets and results for each metric.

For more information: [ESG Databook](#) 