

Moriroku Group-Analysis of Risks and Opportunities to Climate Change (As of June 2025)



[Time Horizon] Medium-term: 4-10 years (2030) Long-term: 11-25 years (2050)

Risk Items			Business Impact		Financial Impact		Implementation Items	Future measures	
Category	Subcategory	Sub-subcategory	Time frame	Risks	Opportunities	Evaluation: Risks			Evaluation: Opportunities
Transition Risks (Analysis based on 1.5-2°C scenario)	Policies and Regulation	Carbon pricing (carbon tax) Emissions trading	Medium- to Long-term	[Group-wide] ● Occurrence of tax burden costs if carbon tax is introduced ● Occurrence of compliance costs if emissions trading areas are expanded ● Destabilization of energy prices due to expansion of applicable scope	[Group-wide] ● Improvement of market reliability and competitiveness through regulatory compliance	High	-	<ul style="list-style-type: none"> Introduction of renewable energy Use of CO2-free electricity Upgrading to highly energy-efficient equipment Promotion of energy recycling (effective utilization of energy without waste) 	<ul style="list-style-type: none"> Expansion of sites introducing renewable energy Expansion of effective use of CO2-free electricity Continued updating to highly energy-efficient equipment Expansion of energy recycling/effective utilization applications
		Plastic regulations	Medium- to Long-term	[Group-wide] ● Prohibition of specific materials and subject to control due to recycling regulations [Resin-treated Products Business] ● Decrease in demand for plastic products if plastic use is regulated ● Cost increase associated with switching from petroleum-derived plastics to alternative materials such as biomass plastic [Chemical Business] ● Decrease in sales of resin-related products if plastic use is regulated	[Resin-treated Products Business] ● Development of new components through development of plastic alternative materials ● Efficiency improvement of manufacturing processes through in-factory recycling [Chemical Business] ● Expansion of sales of new materials such as biomass plastic ● Expansion of recycling business opportunities ● Revenue increase in value chain through provision of chemical solutions	High	High	<ul style="list-style-type: none"> Improvement of material recycling process Material recycling of waste plastics Improvement of material recycling processes Expansion of sales of environmentally-friendly products Material recycling of waste plastics Promotion of environmentally-friendly design through formulation of environmental design guidelines (weight reduction, ease of disassembly and separation, etc.) 	<ul style="list-style-type: none"> Setting targets for plastic consumption and waste volume Promotion of material recycling Further expansion of sales of environmentally-friendly products Expansion of environmentally friendly design applications through the formulation of environmental design guidelines (weight reduction, ease of disassembly and separation, etc.)
		Renewable energy policy	Medium- to Long-term	[Group-wide] ● Increase in investment costs due to introduction of renewable energy ● Destabilization of energy prices due to structural changes in energy markets ● Changes in investment profitability and business development due to policy changes ● Obsolescence of past investments due to technological evolution	[Group-wide] ● Improvement of competitiveness through reduction of energy costs ● Improvement of market competitiveness through environmental consideration and improvement of energy efficiency ● Building trust with stakeholders through social responsibility and improvement of corporate sustainability	Medium	Medium	<ul style="list-style-type: none"> Enhancement and expansion of solar power generation Expansion of introduction of CO2-free electricity Storage battery operation at own facilities Operation of storage batteries at own facilities Improvement of energy utilization efficiency through improvement of manufacturing processes and equipment Upgrading to highly energy-efficient equipment 	<ul style="list-style-type: none"> Long-term utilization of renewable energy through solar power + storage batteries Introduction of lightweight solar power generation cells Expansion and new installation of storage battery systems Expansion of updates to highly energy-efficient equipment Introduction of wind power generation (PPA)
		Energy conservation policy	Medium- to Long-term	[Group-wide] ● Increase in investment costs due to switching to energy-saving equipment	[Group-wide] ● Improvement of competitiveness through reduction of energy costs ● Improvement of market competitiveness through environmental consideration and improvement of energy efficiency ● Building trust with stakeholders through social responsibility and improvement of corporate sustainability [Resin-treated Products Business] ● Energy efficiency improvement through acceleration of energy-saving equipment installation	Medium	Medium	<ul style="list-style-type: none"> Setting of CO2 emission reduction target values Introduction of renewable energy Use of CO2-free electricity Improvement of energy consumption efficiency through introduction of storage batteries Utilization of cogeneration equipment Upgrading to highly energy-efficient equipment 	<ul style="list-style-type: none"> Optimization of solar power + storage battery operation setting modes Unique operation according to seasonal and on-site load conditions Expansion of updates to highly energy-efficient equipment
	Technology	Advancement of low-carbon technologies	Medium- to Long-term	[Group-wide] ● Decrease in demand for existing products and services as they are replaced by low-carbon products ● Cost increase due to technology development, utilization of new technologies, and upfront capital investment for transition to low-carbon emission products and services [Resin-treated Products Business] ● Delays in implementation processes and occurrence of additional costs due to integration of existing manufacturing equipment with low-carbon technology	[Group-wide] ● Increase in demand for environmentally-friendly products and materials through development of environmentally-friendly materials via collaboration between resin product processing business and chemical business [Resin-treated Products Business] ● Revenue increase due to increased demand for low-carbon products through development and deployment of environmentally-friendly products ● Expansion of business opportunities associated with advancement and full-scale adoption of EV technology ● Improvement of production processes and energy efficiency during production, and cost reduction through introduction of low-carbon equipment [Chemical Business] ● Increase in demand and sales opportunities through development of environmentally-friendly materials ● Strengthening competitiveness through supply and sales of low-carbon products ● Building a sustainable supply chain by emphasizing sustainability	High	High	<ul style="list-style-type: none"> Development of environmentally-friendly materials and manufacturing of parts (prototypes) using them Enhancement and expansion of solar power generation Storage battery operation at own facilities Utilization of cogeneration equipment Switching to low-carbon manufacturing equipment (from hydraulic to electric) Shift of steam boiler fuel from heavy oil to gas Expansion of sales of environmentally-friendly products Deployment of carbon nanotubes Applied research on power-generating ink technology leading to reduction of fossil fuel and electricity consumption 	<ul style="list-style-type: none"> Initiatives toward mass production of developed components Expansion of sites introducing renewable energy Expansion of investment to promote low-carbon technology development and innovation Technology development leading to environmentally-friendly products Further weight reduction of products, circular use of resources Further expansion of sales of environmentally-friendly products Promotion of carbon nanotube deployment Promotion of research on application of power generation ink technology
			Medium- to Long-term	[Group-wide] ● Rise in raw material prices associated with increase in raw material prices ● Increase in production costs in energy-intensive manufacturing processes and cost impact on overall production processes ● Increase in production costs due to development of low-carbon technology and installation of equipment ● Rise in electricity prices associated with spread of renewable energy	[Group-wide] ● Cost reduction through efficient production processes, distribution processes, and efficient transportation methods ● Strengthening market competitiveness through energy-efficient manufacturing processes and material development ● Securing stable energy supply through diversification of energy supply	High	High	<ul style="list-style-type: none"> Introduction of carport-type solar power generation at own facilities Introduction of storage batteries at own facilities Introduction of renewable energy Utilization of cogeneration equipment Upgrading to highly energy-efficient equipment 	<ul style="list-style-type: none"> Further improvement of energy efficiency Expansion of renewable energy introduction Monitoring of energy market trends and examination of energy price hedging Expansion of updates to highly energy-efficient equipment
			Medium- to Long-term	[Group-wide] ● Increase in production costs associated with rise in raw material costs ● Rise in raw material prices due to switching to alternative materials ● Production delays and production volume restrictions due to supply shortages of critical raw materials and logistics issues	[Group-wide] ● Development of new products and manufacturing processes through development of alternative materials and introduction of renewable materials ● Cost reduction through reduction of raw material usage, recycling, and consideration of alternative materials	High	High	<ul style="list-style-type: none"> Establishment and deployment of CSR procurement guidelines Visualization and evaluation of supply chain (CSR procurement) Development of environmentally-friendly materials (plastic with 30% environmental materials) Thinning/weight reduction of manufactured parts 	<ul style="list-style-type: none"> Diversification of supply chain Introduction of new manufacturing technologies and processes Shift to sustainable raw materials CSR procurement activities at all sites (including overseas sites) Expansion of resin usage reduction through thinner/lighter manufactured components
	Market	Changes in energy costs	Medium- to Long-term	[Group-wide] ● Rise in raw material prices associated with increase in raw material prices ● Increase in production costs in energy-intensive manufacturing processes and cost impact on overall production processes ● Increase in production costs due to development of low-carbon technology and installation of equipment ● Rise in electricity prices associated with spread of renewable energy	[Group-wide] ● Cost reduction through efficient production processes, distribution processes, and efficient transportation methods ● Strengthening market competitiveness through energy-efficient manufacturing processes and material development ● Securing stable energy supply through diversification of energy supply	High	High	<ul style="list-style-type: none"> Introduction of carport-type solar power generation at own facilities Introduction of storage batteries at own facilities Introduction of renewable energy Utilization of cogeneration equipment Upgrading to highly energy-efficient equipment 	<ul style="list-style-type: none"> Further improvement of energy efficiency Expansion of renewable energy introduction Monitoring of energy market trends and examination of energy price hedging Expansion of updates to highly energy-efficient equipment
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			Medium- to Long-term	[Resin-treated Products Business] ● Building procurement networks through efforts to reduce environmental impact across the entire supply chain [Group-wide] ● Restrictions on use of plastic products due to regulations and environmental changes ● Loss of opportunities due to delays in efforts toward resource-circulating material development ● Intensification of competition such as price competition and improvement of added value by new entrants and existing companies ● Supply difficulties due to impact on raw material procurement and logistics	[Resin-treated Products Business] ● Revenue increase through development of a wide range of plastic products including automotive parts ● Business expansion and diversification through development of new markets and customers [Chemical Business] ● Revenue increase through development of resource-circulating materials (low-carbon, biodegradable, biomass plastic materials, etc.) ● Revenue increase through supply of products responding to changes in consumer needs due to temperature rise ● Revenue increase through supply of new products and services responding to customer needs for climate change adaptation in healthcare, agriculture and food, infrastructure, and other fields	Medium	High	<ul style="list-style-type: none"> Visualization and evaluation of supply chain (CSR procurement) Environmentally-friendly product development Development of environmentally-friendly products Formulation of guidelines in accordance with the Plastic Resource Circulation Act Reduction of environmental impact through advancement of decoration technology development Promotion of material recycling Application of recycled materials Reduction of environmental impact through plating-alternative decoration Development of products utilizing unused resources Product development utilizing unused resources 	<ul style="list-style-type: none"> Assessment of chemical substance safety and environmental impact Further investment in sustainable product development and innovation Development of further weight reduction technology and standardization of specifications Building circular business models through the promotion of circular economy Supply of new products to respond and adapt to climate change Expansion of recycled material applications Expansion of parts application for plating-alternative decoration Continued product development utilizing unused resources Product development utilizing unused resources
Reputation	Changes in Group reputation among external stakeholders	Medium- to Long-term	[Group-wide] ● Improvement of reliability through environmental response and sufficient information disclosure [Group-wide] ● Due to transaction restrictions by customers when environmental consideration is evaluated as insufficient ● Revenue decrease due to customer transaction restrictions if environmental consideration is evaluated as insufficient ● Decline in reputation and evaluation due to insufficient disclosure of environmental information ● Decrease in procured funds and increase in financing costs if environmental consideration is judged as insufficient	[Group-wide] ● Improvement of business continuity and market value through addressing climate change across the entire supply chain ● Building sustainable business models and creating new market opportunities through efforts to reduce plastic waste and recycling [Resin-processed Products Business] ● Improvement of reputation and corporate value through development of environmentally-friendly products [Chemical Business] ● Improvement of reputation and corporate value for environment-related business	High	High	<ul style="list-style-type: none"> Addressing climate change issues across the entire supply chain Addressing climate change issues across the entire supply chain (Support for supplier CO2 emission reduction) Development of environmentally-friendly materials (plastic with 30% environmental materials) Consideration of investment in environment-related businesses Disclosure of ESG information Introduction of third-party evaluation 	<ul style="list-style-type: none"> Evolution of climate change response throughout the entire supply chain (Support for supplier CO2 emission reduction) Further ESG information disclosure Integration of climate change risk response and management strategy Investment in environment-related businesses Continuation of third-party evaluation 	
		Medium- to Long-term	[Group-wide] ● Increase in repair costs due to damage associated with increase in extreme weather events ● Due to sudden manufacturing shutdowns or supply chain disruptions caused by abnormal weather conditions ● Decline in manufacturing functions and production volume, and decrease in sales due to sudden manufacturing stoppages and supply chain disruptions caused by extreme weather ● Difficulty in supplying alternatives and increase in material costs due to disruption of raw material supply networks associated with extreme weather [Resin-treated Products Business] ● Difficulty in material procurement due to suppliers being affected by extreme weather [Chemical Business] ● Disruption of purchasing and sales networks associated with increase in extreme weather events	[Group-wide] ● Strengthening supply response capability and avoiding procurement risks through production at multiple global sites ● Development of new markets by responding to customer needs during extreme weather events	High	High	<ul style="list-style-type: none"> Preparation for natural disasters through establishment of BCP Construction of power supply system utilizing solar power generation + storage batteries Partial introduction of waterless toilets 	<ul style="list-style-type: none"> Further strengthening of natural disaster countermeasures (Strengthening safety measures according to the conditions at each site) Power supply to critical equipment and neighboring residents through carport-type solar power generation + storage battery utilization Study expansion of waterless toilet applications 	
Physical Risks (Analysis based on 4°C scenario)	Acute	Increase in severity of extreme weather events (typhoons, heavy rainfall, landslides, etc.)	Medium- to Long-term	[Group-wide] ● Increase in repair costs due to damage associated with increase in extreme weather events ● Due to sudden manufacturing shutdowns or supply chain disruptions caused by abnormal weather conditions ● Decline in manufacturing functions and production volume, and decrease in sales due to sudden manufacturing stoppages and supply chain disruptions caused by extreme weather ● Difficulty in supplying alternatives and increase in material costs due to disruption of raw material supply networks associated with extreme weather [Resin-treated Products Business] ● Difficulty in material procurement due to suppliers being affected by extreme weather [Chemical Business] ● Disruption of purchasing and sales networks associated with increase in extreme weather events	[Group-wide] ● Strengthening supply response capability and avoiding procurement risks through production at multiple global sites ● Development of new markets by responding to customer needs during extreme weather events	High	High	<ul style="list-style-type: none"> Preparation for natural disasters through establishment of BCP Construction of power supply system utilizing solar power generation + storage batteries Partial introduction of waterless toilets 	<ul style="list-style-type: none"> Further strengthening of natural disaster countermeasures (Strengthening safety measures according to the conditions at each site) Power supply to critical equipment and neighboring residents through carport-type solar power generation + storage battery utilization Study expansion of waterless toilet applications
			Medium- to Long-term	[Group-wide] ● Cost increase due to increased use of air conditioning at business sites ● Increase in time required for employee health management and decrease in productivity associated with temperature rise	[Chemical Business] ● Increase in demand for environmentally-friendly products such as naturally-derived ingredients and sustainable packaging ● Increase in market opportunities through handling of chemical products using renewable materials and low-carbon products	Medium	-	<ul style="list-style-type: none"> Introduction of renewable energy Participation in forest conservation activities Promotion of energy recycling (effective utilization of energy without waste) 	<ul style="list-style-type: none"> Expansion of sites introducing renewable energy Continuous tree planting activities and implementation of global forest conservation activities Expansion of energy recycling applications