Degree of impact. High impact: 10 billion JPY or more annually; medium impact: one billion JPY to 10 billion JPY annually

Occurrence period. Medium-term: Through about 2030; Long-term: Through about 2050

Scenario	Category		Driver	Impact on business	Degree of impact	Occurrence period	SMM Group approach (response measures)
1.5°C scenario	Transition risks	Policy and regulations	Introduction of carbon pricing (carbon taxes, emissions trading, fossil fuel surcharges, European carbon border adjustment mechanism)	● Carbon tax burdens ● Emissions trading cost burdens ● Increased fuel costs due to fossil fuel surcharges	Large	Medium to long term	**Comprehensive energy conservation and higher efficiency** Improvement of energy use intensity by an average of 1% or more annually **Energy transition** Electrification of heat source equipment Transition from coal and heavy oil to liquified natural gas (LNG) and development of procurement structures to secure LNG Development of procurement structures for co-firing of coal and wood pellets and securing wood pellets Technology development for use of new fuels (hydrogen, ammonia, synthetic fuels) (long term) **Increased use of renewable electricity** Expanded introduction of in-house solar and wind power (on-site and off-site PPA[2]) Expanded transition to renewable energy (including use of non-fossil fuel certificates) Development of technology for use of stored electricity systems (long term) **Technology development** Development of technology to improve recycling Development of technology relating to innovative smelting processes Development of technology for use of carbon dioxide capture and storage (CCS)[3](long term) **Securing mineral resources and raw materials** Securing stable supplies of copper and other resources from mines in which the Company holds interests Collecting information taking into consideration resource nationalism
			Stricter energy-saving and decarbonization regulations (European battery regulations)	● Increased costs for energy-saving, high-efficiency, and electrified equipment ● Increased electricity costs due to use of renewable energy ● Intensified competition to procure renewable energy	Large	Medium to long term	
			Tighter regulations concerning a circular economy (Ecodesign for Sustainable Products Regulation, European (EU) Battery Regulations)	● Increased raw material costs due to the use of recycled raw materials ● Intensified competition to procure recycled raw materials	Large	Medium to long term	
		Markets	Higher requirements for low-carbon and decarbonized Company products (copper, nickel, battery cathode materials, etc.)	● Increased energy costs due to energy transitions ● Intensified competition among products with low carbon footprint of product (CFP)[1] (decreased sales of high CFP products) ● Aging of existing products and technologies, increased technology development costs	Large	Medium to long term	
			Rising excessive resource nationalism in resource-producing countries (copper, nickel, lithium, cobalt, etc.)	● Increased costs due to stricter imposition of taxes and higher royalties ● Shortages of raw materials due to prohibitions on the export of ores and intermediate raw materials ● Intensified competition for acquisition of mining interests	Large	Medium to long term	
	Opportunities	Policy and regulations	Spread and expansion of electric vehicles	● Increased sales of battery cathode materials, nickel and cobalt included in cathode materials, and copper used in wire harnesses and drive motors	Large	Medium to long term	**Continuous operating improvements** Maintenance of stable operations Improved productivity and cost competitiveness **Promotion and expansion of new business** Commercialization of battery recycling Commercialization of SiC substrates Introduction of near-infrared absorbing materials into new markets **Implementation of large-scale projects for increasing production of battery materials** **Technology development** Increased pace of technology development to enhance the performance of automotive battery cathode materials (nickel-based) Development of technology for new processes for lithium-ion phosphate (LFP) cathode materials Development of technology for functional materials suitable for automotive electronic devices, 5G smartphones, and the Internet of things (IoT) Development of technology for hydrogen manufacturing-related materials **Securing mineral resources and raw materials** Securing stable supplies of copper and other resources from mines in which the Company holds interests Acquisition of interests in and development of new high-quality mines
			Increased demand for electricity, expansion of electric power grids	● Increased sales of copper used in transmission lines and transformers ● Increased sales of silicon carbide (SiC) substrates used in high-efficiency power semiconductors	Large	Medium to long term	
			Use of renewable energy as a main power source	● Increased sales of copper used in wind power motors and transformers ● Increased sales of battery cathode materials, nickel, and cobalt used in storage cells for controlling variation in renewable energy	Large	Medium to long term	
		Markets	Enhanced performance of electronic devices for the use of digital technologies	● Development of technology for and increased sales of high-performance materials used in electronic devices	Medium	Medium to long term	
			Development of next-generation materials	● Development of hydrogen manufacturing catalyst, artificial photosynthesis catalysts, and fuel cell materials and expansion of new business	Medium	Medium to long term	
4°C scenario	Physical risks	Chronic	Sea level rise	● Decreased functionality of ports and backlands (coastal plants, etc.) and intensification of damage to facilities due to high tides and flooding during rain storms ● Increased recovery costs and increased facility countermeasure costs	Large	Long term	**Reinforced adaptation measures** Securing alternative ports Environmental improvement of hot workplaces (heatstroke countermeasures) Expansion of business continuity plans (BCP) Responses to the Global Industry Standard on Tailings Management (GISTM) Diversification of suppliers, reinforcement of relationships with suppliers, securing alternative transportation routes, and securing inventories and alternative raw materials
			Temperature rise	● Decreased productivity due to heat stress in hot workplaces ● Increased incidence of heat stroke ● Increased facility countermeasure costs	Medium	Long term	
		Acute	Increases in abnormal weather, such as heat waves, extreme rainfall, large typhoons, and droughts in the 100-year projection	● Intensification of rainstorms, flooding, and landslides ● Loss of business opportunities due to damage to production equipment and production stoppages ● Increased recovery costs and increased facility countermeasure costs	Medium	Medium to long term	
				● Demands for large amounts of compensatory damages for damage caused by tailings dam overflow and collapse ● Increased insurance premiums ● Increased recovery costs and increased facility countermeasure costs	Large	Medium to long term	
				● Business interruption and cessation of operations due to disruption of supply chains ● Loss of business opportunity due to suspension of production	Medium	Medium to long term	

1 Carbon footprint of products (CFP): Emissions per unit of products

2 On-site and off-site PPA: On-site PPA the supply of electricity by a powered generating company by installing solar power generation equipment on land owned by another company, and off-site PPA is the installation of solar power generating equipment outside of the company's premises and transmitting the electricity to the company via the electric power grid

3 Carbon dioxide capture and storage (CCS): Technology for separating and collecting carbon dioxide and storing it underground or in other locations