Enhancing Quality of Life

—Providing Products Required by Society—

Climate Change Issues

Komatsu established the Komatsu Earth Environment Charter in 1992, launching proactive initiatives for addressing climate change and other environmental issues a step ahead of its peers.

The enactment of the Paris Agreement in 2016 sparked a rapid rise in the importance of initiatives for addressing climate change in the global society. As a global business operator, Komatsu recognizes that contributing to the transition to a low-carbon society is an important management issue in light of the increased frequency of abnormal climate events and natural disasters and changes in resource demand resulting from global warming.

In April 2019, Komatsu announced its endorsement of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Through climate change risk and opportunity assessments and scenario analyses based on these recommendations, we will pursue increases our resilience toward climate change impacts. At the same time, we will advance climate change response measures through a healthy dialogue with stakeholders. Furthermore, we will supply high-quality, high-performance products, services, and solutions that are designed for reducing environmental impacts, particularly in relation to climate change, and for safety.

Resolution of ESG Issues

Initiatives Based on TCFD Framework

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

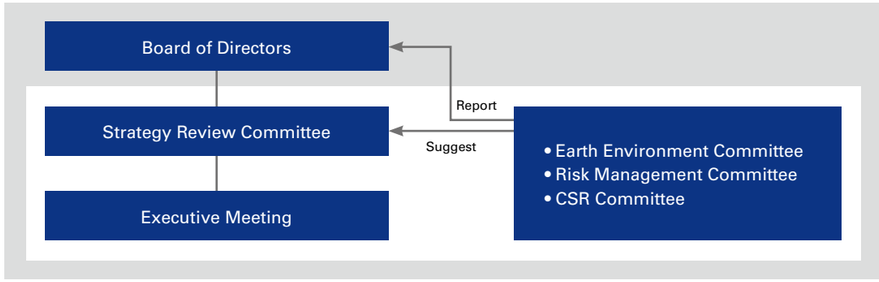
Governance

Komatsu views climate change as an important management issue, and targets for combating climate change have been incorporated into its business strategies.

Discussions regarding climate change are held at meetings of the Earth Environment Committee, the Risk Management Committee, and the CSR Committee, and these committees make suggestions to the Strategy Review Committee and report to the Board of Directors, thereby furnishing a system of appropriate oversight.

Meanwhile, the Executive Meeting fulfills the function of managing progress toward targets.

Climate Change-Related Reporting and Deliberation System



Major Discussion Items Related to Climate Change

Name	Chairperson	Major Discussion Items Related to Climate Change
Board of Directors	Chairman of the Board and Representative Director	• Report from Earth Environment Committee (once a year) • Reports from research, development, and product planning divisions and the Chief Technology Officer (once a year) • Reports from production and procurement divisions (once a year) • Mid-term management plan progress report (once a year)
Strategy Review Committee	President	• Growth strategies for major plants (including climate change-related matters, five times a year) • Report from Environmental Affairs Department (once a year)
Executive Meeting	President	• Progress in regard to product development and production systems (monthly) • Climate change lectures by external specialists (once a year)

Name	Chairperson	Major Discussion Items Related to Climate Change
Earth Environment Committee	President	• Deliberations and reports regarding important environmental matters and key performance indicators (KPIs) • Reports on overall environmental frameworks and activities
Risk Management Committee	Executive officer supervising general affairs	• Reports on responses to natural disaster risks
CSR Committee	President	• Initiatives for addressing ESG issues • CSR activity reports

Resolution of ESG Issues

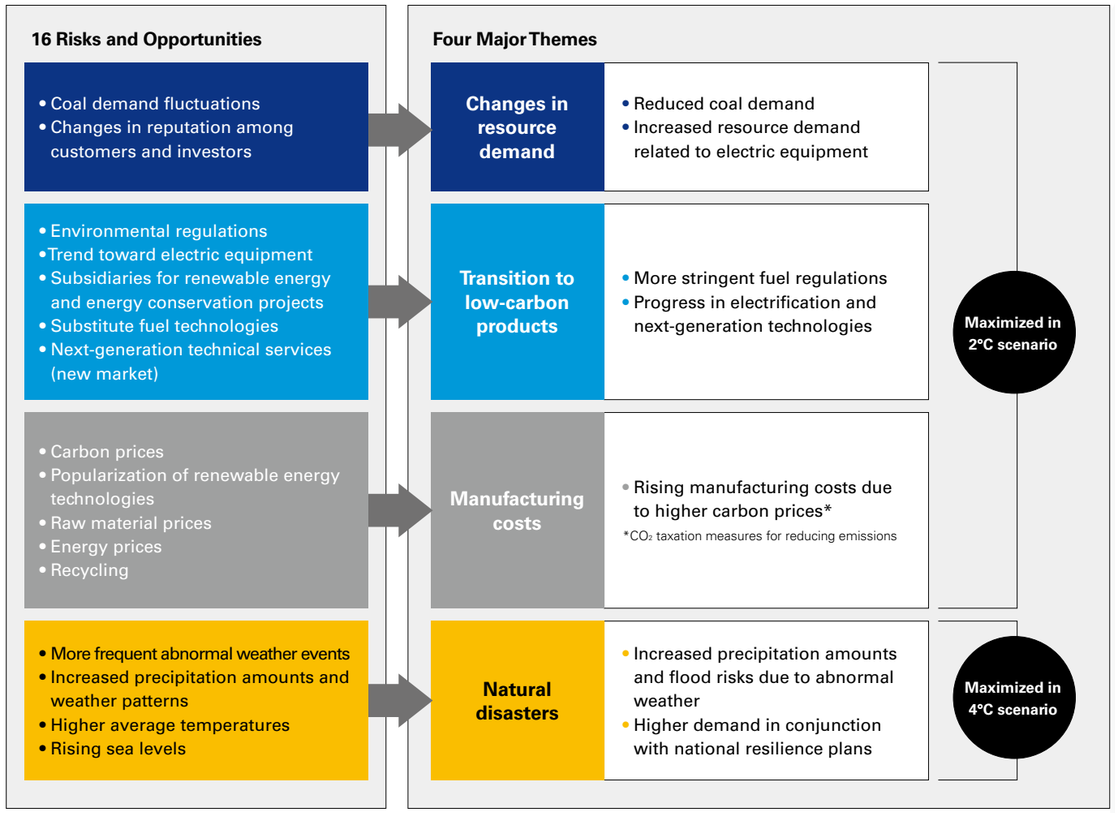
Strategies

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Risk and Opportunity Identification

In FY2019, a total of 16 climate change-related risks and opportunities were identified for Komatsu, primarily in relation to construction equipment operations, based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). We then assessed internal factors, which impact sales and earnings, and external factors, which affect projected scenarios. Through this process, the 16 risks and opportunities were grouped based on four major themes.

Risks and Opportunities and Groupings



Business Risks and Opportunities Based on Climate Change Scenarios

To gauge the potential impacts of climate change-related risks and opportunities on Komatsu's business, we performed scenario analyses of the Company's four major risk and opportunity themes. For these scenario analyses, we defined a 2°C scenario and a 4°C scenario based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Representative Concentration Pathways 2.6 and 8.5) and the Sustainable Development Scenario and Stated Policies Scenario of the International Energy Agency (IEA).

The risks and opportunities pertaining to specific ESG themes and Komatsu's strategies for addressing these risks and opportunities are described on the following page.

Changes in Resource Demand

	Risks	Opportunities
2°C scenario	• Regulation of power generation using fossil fuels • Massive reductions in coal production volumes under IEA scenarios • Reduced sales to coal-related customers by Komatsu	• Rapid transition from fossil fuel-powered equipment to electric equipment • Higher demand for copper and other resources necessary for electric equipment (motors, batteries, fuel cells, etc.) • Increased sales to copper and other relevant mining-related customers by Komatsu in conjunction with trend toward electric equipment
4°C scenario	• Limited regulation of coal in developing nations • Coal production volumes in 2030 in line with current levels under IEA scenarios • Reduced appetite for investment in coal mines	• Trend toward electric equipment less pronounced than in 2°C scenario • Higher demand for copper and other resources necessary for electric equipment • Rise in investment for streamlining mine operations

Strategies

Exploration of business opportunities arising from climate change through value creation by means of innovation and growth strategies based on innovation

- Increased metal resource demand in conjunction with transition to electric equipment—Expansion of underground mining equipment operations
- Contribution to sustainable forestry—Provision of equipment and systems for streamlining processes spanning from afforestation to logging
- Contribution to rehabilitation of closed mine sites and greenification of deserts—Forest restoration projects at closed mine sites and forest machine operations
- Transition to circular economies—Expansion of equipment restoration ("Reman") business

Transition to Low-Carbon Products

	Risks	Opportunities
2°C scenario	• Regulations promoting transition to fuel-efficient equipment, electric equipment, and other low-carbon products • Rapid changes in research and development trends and competitive climate and market entry by new competitors	• Higher demand for electric, fuel-efficient, and bio-fuel equipment • Expansion of equipment restoration ("Reman") business in conjunction with transition to circular economies • Increased demand for SMARTCONSTRUCTION and other solutions contributing to decarbonization
Strategies	• Respond to transition risks by shifting toward low-carbon products through realization of the safe, highly productive, smart, and clean workplaces of the future described in the mid-term management plan	

Manufacturing Costs

	Risks	Opportunities
2°C scenario	• Taxation of fossil fuels and CO_2 emissions • Transfer of higher product purchase prices to Komatsu • Rising power fees and energy costs following investment in power generation facilities with low CO_2 emissions	• Increased competitiveness through production technologies that reduce CO_2 emissions
Strategies	• Mitigation of cost increases by achieving CO_2 reduction and renewable energy targets defined in the mid-term management plan	

Natural Disasters

	Risks	Opportunities
4°C scenario	• Increased frequency of heavy rain and floods due to abnormal weather • Risks of disaster damages to Komatsu plants at high risk of flooding • Component supply delays following damages to suppliers from disasters	• Increased demand for flood-control works
Strategies	• Institute heavy rain and flood countermeasures across the value chain	

Resolution of ESG Issues

Risk Management

Please refer to page 52 for information on the Company's risk management systems.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Indicators and Targets

Komatsu is mitigating climate change through its business by supplying high-quality, high-performance products, services, and solutions that include provisions for ensuring safety and reducing climate change-related environmental impacts.
The following three indicators and accompanying targets have been set in the mid-term management plan to facilitate the appropriate assessment and management of climate change-related risks and opportunities.

Climate Change-Related Indicators and Targets

Indicators	Targets
CO_2 emissions from product use	Decrease by 50% in 2030 (Base year of 2010, basic unit)
CO_2 emissions from production	Decrease by 50% in 2030 (Base year of 2010, basic unit)
Rate of renewable energy use	50% in 2030

Please refer to *ESG Databook 2020* for more information.
https://komatsu.disclosure.site/en/themes/149

VOICE Message from the CTO (Supervising Research & Development and Environment)

Komatsu's mid-term management plan puts forth environmental impact reduction targets pertaining to cutting CO_2 emissions, which contribute to mitigating climate change, and the increasing use of renewable energy. Approximately 90% of CO_2 emissions from the lifecycles of Komatsu construction equipment, which span from production through to disposal, are attributable to the consumption of fuel during product use at active workplaces. Recognizing this fact, we are dedicated to lowering CO_2 emissions from both production and product use.

Efforts to reduce CO_2 emissions from production include utilizing ICT to carefully track product manufacturing processes and all of the energy used therein and identifying where energy is wasted in these processes. We are addressing this waste through steadfast small reforms to remove each and every source of energy waste as well as large reforms that entail transforming the very way we do our work. By tracking metrics pertaining to factors such as plant air-conditioning, lighting, and machinery, we are endeavoring to eliminate wastes and switch to more efficient equipment. These energy conservation efforts are being complemented by the increased use of renewable energy. Specific renewable energy initiatives include electricity generation using solar power and thinned wood as well as air-conditioning systems that take advantage of differences in temperature between air and underground water.

To reduce CO_2 emissions from product use, Komatsu is utilizing its proprietary technology development and production systems to improve efficiency with regard to engines and hydraulic, electronic, and other components. These efforts have led to the reduction of CO_2 emissions through the introduction of the world's first hybrid system for construction equipment. Through ongoing development and improvement measures driven by proprietary technologies, we seek to further reduce the CO_2 emissions from Komatsu products. For example, we have been promoting the electrification of our products and have launched compact battery-powered forklifts and, more recently, electric mini excavators that do not emit CO_2.

Our attempts to improve the fuel efficiency of our products are not limited to performance enhancements to the products themselves; we are also utilizing Internet of Things (IoT) technologies obtained through open innovation to reduce fuel consumption by tracking conditions across active workplaces. For example, KOMTRAX includes a function that provides customers with operating status and fuel efficiency improvement recommendations to encourage them to use their equipment more efficiently. Meanwhile, the SMARTCONSTRUCTION solution monitors conditions throughout construction workplaces to propose more efficient construction methods and allows us to provide solutions for optimizing customer workplaces.

Yuichi Iwamoto
Senior Executive Officer
Chief Technology Officer (CTO)
Supervising Research & Development and Environment

We are also pursuing CO_2 reductions in the forest machine business, which has been identified as a core theme of the mid-term management plan. In this business, we see potential to cut emissions by delivering products with superior safety and productivity to realize recycling-oriented forestry, a woodland management approach entailing a cycle of planting, cultivating, and felling forests. Accordingly, as part of our social contribution activities, we have been participating in forest restoration projects to greenify the sites of mines at which the excavation of underground minerals has been completed.

Komatsu does not view climate change response measures exclusively in terms of the related risks. Rather, we see these measures as representing prime opportunities to create new businesses. For example, we could create businesses that enable us to improve the value of customer workplaces through the provision of solutions that take advantage of products and open innovation capitalizing on the strength of our ability to develop and produce key components in-house.

TOPICS

Afforestation Projects Advanced Worldwide

Surface mining operations are subject to rigorous regulation to protect the environment as they develop resources. The mine rehabilitation process, which includes filling mine sites and restoring them for use in agriculture or as forests, entails a great deal of effort within the confines of this regulatory framework.

However, even such effort does not guarantee that former mine sites can be revived as sustainable forests. If the revegetation process fails, the nutrition will be lost from the top soil, due to its reduced water-holding capacity, and the mine site will decay further.

Komatsu believes that human intervention is needed to break this downward spiral and assist in the forest restoration process. In addition to helping forge relationships with our mining customers, these efforts utilize our construction equipment and forest machines, making them a social contribution activity that is highly compatible with Komatsu's business.

North America-Originating Forest Restoration Projects Spreading across the Globe

Komatsu's involvement in forest restoration projects can be traced back to projects launched in North America in April 2019. Through one of these projects, we are working to rehabilitate a mine site spanning 1,000 acres (4 square kilometers) in West Virginia over a period of three years. Komatsu provides monetary support, renting equipment, and dispatching employee volunteers for tree planting activities in this project (see *KOMATSU REPORT 2019* for details). In FY2019, we planted 50,000 trees across a 93-acre (0.4 square kilometers) stretch of the former mine site.

In March 2020, another forest restoration project was launched in Australia through collaboration between major mineral resource company Anglo American PLC and Komatsu Australia Pty. Ltd. and Komatsu Mining Corp. The current goal of this project is to plant more than 9,000 trees at the former site of Anglo American's Dawson Mine to restore the forest of this site using indigenous tree species and with an eye to converting parts of the site to farmland. At the kickoff event held in March 2020, a total of 120 people, including employees of the three companies, local residents, and elementary school students, gathered to plant 4,000 trees in a single day.

Kickoff event held in Australia in March 2020 at which a total of 120 people gathered to plant 4,000 trees in a single day

In Europe, we have partnered with Belgium-based NPO Tree-Nation ASBL, which specializes in afforestation, and we are conducting donation campaigns to fund the afforestation activities this NPO is advancing on five continents. A major characteristic of this initiative is that it allows donators to check the progress in the tree planting activities they funded and confirm the resulting CO_2 absorption volume via a smartphone application. European Komatsu Group companies are soliciting donations on various occasions via the efforts of employees as well as collaboration with partners to contribute to the restoration of forests.

Carbon Offset Initiatives

The forests to be restored through the on-schedule advancement of forest restoration projects in North America and Australia should absorb an estimated value of approximately 2,000 tons of CO_2 each year. Komatsu anticipates that the spread of its forest restoration projects will have the positive benefit of mitigating climate change.