

## Climate-related disclosure based on TCFD-recommendations

DMG MORI COMPANY LIMITED intends to proactively disclose climate change-related risks and opportunities in accordance with the recommendations of The Task Force on Climate-related Financial Disclosures (TCFD), and hereby expresses its support for the recommendations.

The outline of TCFD is as follows:

- At the request of the G20, the Financial Stability Board (FSB) established the industry-led Task Force in December 2015 to design a set of recommendations for consistent disclosure on climate-related information.
- In June 2017, TCFD proposed a disclosure framework specializing in climate-related information as its final report.
- In 2018, the Ministry of Economy, Trade and Industry has confirmed the recommendations and published a guideline in Japan.

### Governance

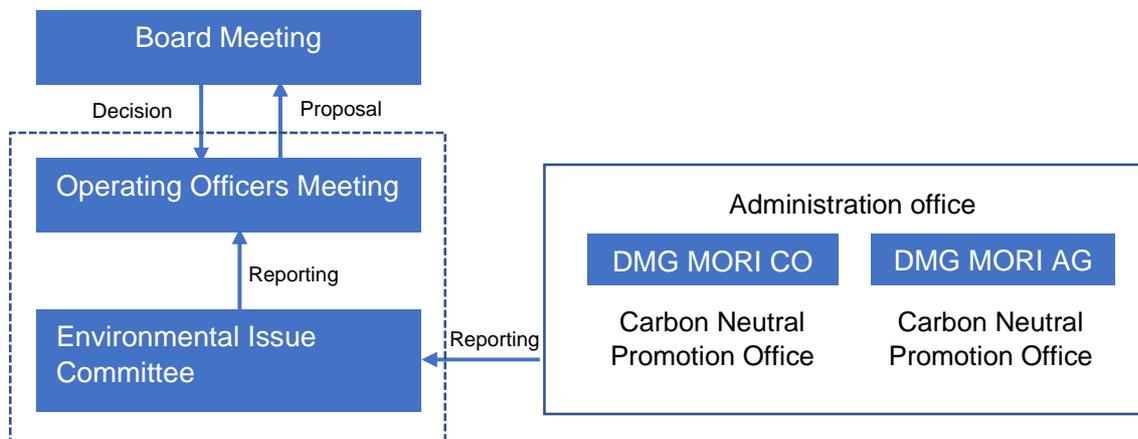
DMG MORI COMPANY LIMITED (hereinafter referred to as CO), and its fully owned German holding company DMG MORI AKTIENGESELLSCHAFT (hereinafter referred to as AG) have each established the "Carbon Neutral Promotion Office" as the department in charge of assessing climate change risks and opportunities, and then planning, implementing and monitoring associated countermeasures. While the ultimate responsibility of the entire Group's climate-related issues lies with Dr. Mori, President & Group CEO, the department is under the direct supervision of Mr. Tamai, Executive Vice President for CO and Mr. Thönes, CEO and Dr. Eschweiler, Chief Representative, for AG, respectively. The department regularly reports the calculation results of the Company's CO<sub>2</sub> emissions to the Board of Directors, and requests approval of the CO<sub>2</sub> emissions reduction plan and important capital expenditures related to it. In addition, the department has already completed calculation of CO<sub>2</sub> emissions by group companies from Scope 1 to Scope 3 upstream categories for 2020 and established a CO<sub>2</sub> emissions reduction plan until 2030. The department monitors progress continuously and reports at the monthly operating officers' meeting.

In quantifying greenhouse gas (GHG) emissions, we have contracted with Germany-based specialist Fokus Zukunft GmbH & Co. KG who supports us comprehensively regarding our group-wide greenhouse gas (GHG) assessment and mitigation process. Since January 2021, we have shipped our machines labeled as "GREENMACHINE", as they are climate-neutrally produced from the procurement of components up to machine shipment from our factories by utilizing internationally accepted emission certificates. The climate-neutrality was assessed and confirmed by independent auditor, PricewaterhouseCoopers GmbH.

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**Figure 1** Climate-related Governance Structure at DMG MORI



**Table 1** Role of Climate-related Organizations at DMG MORI

Organization	Role	Frequency to discuss climate-related matters
Board Meeting	Both assessing and monitoring climate-related issues, and making investment decisions as necessary	At least once per quarter (Board meeting itself is generally held once per month)
Operating Officers Meeting	Assessing climate-related risks and opportunities and examining alternative measures to deal with assessed issues	Once per month
Environmental Issue Committee (sub-committee of Operating Officers Meeting)	Implementing and monitoring group-wide climate-related measures, such as GHG emissions reduction actions	

## Strategy

Regarding climate change, we believe that our machine tool business itself will contribute to protecting the environment. Process integration machines such as 5-axis machines and mill-turn centers save various resources, including electric power by replacing multiple machine tools by one. In addition, the superior processing accuracy, geometric accuracy, and volumetric accuracy offered by our company contributes to the effective use of resources through optimizing the bonding between parts by improving the friction coefficient, which will lead to reduction of energy loss during product use and to prolonged product life. Furthermore, by promoting automation and digitization, we will maximize the resource management of our customers and our own factories by streamlining the entire machining process from work production planning to actual processing, measurement, and maintenance services. Since a machine tool has a usage period of 10 to 20 years or more, the year-by-year improvement of our "GREEN mode" technology, which saves

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power consumption of the machine tools, contributes to the cumulative reduction of power consumption over the equipment usage period.

## Risk & Opportunity

Regarding climate-related risks and opportunities in our machine tool business, we examined both "transition" risks and opportunities caused by changes in policies, regulations or social demands of customers and other stakeholders, and "physical" risks caused by natural disasters and rising temperatures.

### 1. Transition risks

- Introduction of emissions trading and carbon taxes are planned or discussed by the governments around the world, and associated costs would directly and indirectly increase the procurement costs of materials and fuels if they are introduced. In reaction to these trends, we have already introduced green electricity procurement, and at the same time, we are promoting the reduction of CO<sub>2</sub> emissions by installing solar power generation and biomass thermo-electric supply system in our own facilities, as well as compensating remaining emissions by means of certified and internationally recognized climate protection projects such as hydropower plant in Brazil and solar power generation project in India. We believe that such measures mitigate our transition risks.
- Regarding business risks, customer needs are changing, such as a shift from internal combustion engine (ICE) vehicles to electric vehicles (EVs). There is a view that machine tool demand will therefore decrease since the number of parts per EV is reduced to two-thirds compared to an internal combustion engine car. At the same time however, the shift to EV is creating new demand for higher precision parts and lightweight parts to reduce battery consumption, and this development can hence be a great opportunity for such machine tool manufacturers that can meet the emerging demand.
- Another example is a reputational risk due to a shift in investors' perceived corporate value. Currently, there is no unified evaluation standard and disclosure framework for climate-related issues, and there is a risk that related efforts of a company will not be properly evaluated from the outside. For the time being, we will disclose our response to climate change based on TCFD recommendations and through CDP.

### 2. Transition opportunities

As mentioned above, the transition to a decarbonized and energy-saving society requires high-precision machining, so we expect an increase in demand for ultra-high-precision and high-speed machine tools with single-chucking process such as 5-axis machines and mill-turn centers. We also expect increased demand for automation and digitization to improve the efficiency of machining production processes.

The shift to EVs is progressing rapidly in Europe and the United States. Associated changes not only appear in drive trains and battery-related parts. Model changes, architectural changes, changes in used materials are also leading to an increase in

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demand for additive manufacturing machines, ultrasonic machines as well as conventional cutting machine tools.

In addition, an increased demand for machine tools can be expected from changes in power generation systems. According to the World Energy Outlook 2019 published by the IEA (International Energy Agency), the share of wind power, including offshore wind power, in global electricity generation will increase to about 13% in the so-called Stated Policies scenario or to about 21% in the so-called Sustainable Development scenario by 2040 (from about 5% in 2018). Offshore and onshore wind power generation systems consist of about 20,000 parts per unit and require a lot of metal processing.

Last, industries such as ships, trucks, buses, construction machinery, and agricultural machinery, that use diesel engines, are being equipped with more energy-efficient engines, due to the tightening of GHG emission regulations, which should be another factor for increasing demand for machine tools.

### **3. Physical risk**

We operate 14 factories and 137 offices in 43 countries around the world (as of December 31, 2020). Floods caused by rising sea levels due to rising average temperatures, increased severity of cyclones, floods, etc. may affect our production facilities. At this point, we believe that the risks from rising sea levels are extremely low because most of our factories are located inland. We have been expanding local procurement, while considering mutual supply between regions in the event of supply chain interruptions, which will mitigate risks associated with extreme weather events. We recognize that it is a future task that these risks should be evaluated objectively with third-party experts. We plan to carefully examine physical risks in the process of reviewing our BCP (Business Continuity Plan).

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**Table 2** Climate-related Risks at DMG MORI

Type	Climate-Related Risks	Potential Financial Impacts	Magnitude of impact	Specific description	CDP 2021 reported
Transition Risks	Increased pricing of GHG emissions (e.g. carbon taxes)	Increased direct costs	Medium	Increased procurement costs due to the introduction of carbon taxes	Yes
	Enhanced emissions-reporting obligations	Higher compliance costs	Medium-Low		Yes
	Increased cost of raw materials and energy	Increased production costs due to changing input prices (e.g. energy, water) and output requirements (e.g. waste treatment)	Medium-Low	In particular, renewable-sourced electricity prices may rise due to the increased demand for such energy	No
	Changing customer behavior	Reduced demand for goods and services due to shift in consumer preferences	Medium	Manufacturers may choose climate-neutrally produced capital goods in the efforts to achieve climate-neutrality throughout their supply chain. In case the company fails to respond to such trends, it may lose the competitive advantage.	Yes
	Increased stakeholder concern or negative stakeholder feedback	Reduction in capital availability or increased equity cost	Low	Since our business is not a carbon-intensive industry, we assume that the risk of being subject to divestment is relatively low.	Yes
Physical Risks	Increased severity of extreme weather events	<ul style="list-style-type: none"> <li>● Reduced revenue due to supply chain interruptions</li> <li>● Write-offs of existing assets due to damages to</li> </ul>	Low	Most of our production facilities are not located in “high-risk” locations.	No

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		property and assets caused by e.g. flood.			
	Rising mean temperatures	Increased operating costs (e.g. air-conditioning for factories)	Medium	More strict temperature control in the factories will be required to guarantee the precision of machine tools, which will lead to increased power consumption.	No

**Table 3** Climate-related Opportunities at DMG MORI

Type	Climate-Related Opportunities	Potential Financial Impacts	Magnitude of impact	Specific description	CDP 2021 reported
Products and Services	Development and/or expansion of low emission goods	Increased revenue through demand for lower emissions products and services	Medium	Customers may prefer our carbon-neutral products in their efforts to reduce GHG emissions throughout their supply chain	Yes
Markets	Access to new markets	Increased revenues through access to new and emerging markets	High	<ul style="list-style-type: none"> <li>Newly emerging demands, such as those for offshore wind power generation system or electric vehicle(EV)-related parts</li> <li>Increased demand from industries such as ships, trucks, buses, construction, etc., that use diesel engines, in pursuit of more energy-efficient engines with lower GHG emissions.</li> </ul>	Yes

In analyzing the risks and opportunities, we refer to the following sources:

- IEA (International Energy Agency): World Energy Outlook 2019
- IPCC (United Nations Intergovernmental Panel on Climate Change): Fifth Assessment Report (AR5: 2014), Special Report (October 2018)
- World resources Institute : Aqueduct

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## Risk Management

In the DMG MORI Group, climate change-related risks are continuously identified and assessed by Carbon Neutral Promotion Office, and reported to the Environmental Committee which convenes once a month at the Operating Officers Meeting. In case urgent matters arise, the Carbon Neutral Promotion Office will report to Mr. Tamai, Executive Vice President (Dr. Eschweiler, Chief Representative on the AG side), and who is in charge of the division, in a timely manner. The Board has established a process for discussing and deciding on climate-related issues, at least quarterly or whenever climate-related matters that may have a significant impact on the business arise.

## Metrics and Targets:

Since 2019, DMG MORI has quantified group-wide greenhouse gas (GHG) emissions with the support of Fokus Zukunft. DMG MORI confirmed CO<sub>2</sub> emissions from Scope 1 to Scope 3 upstream categories at 784,000 tons in FY2019 and 488,000 tons in FY2020, respectively. Because around 70% of CO<sub>2</sub> emissions in DMG MORI depend on the purchased materials and components from suppliers, i.e. Category 1 of Scope 3, as shown in Table 4, the group's total GHG emissions depend on the production volume.

## Targets

Because our total CO<sub>2</sub> emissions depend on production volume, we believe that intensity-based metrics, or CO<sub>2</sub> emissions per machine tool produced are more appropriate than absolute figures. In 2019, CO<sub>2</sub> emissions per machine unit amounted to 78 tons. Compared to 2019 level, we aim to reduce CO<sub>2</sub> emissions by 30% until 2030, i.e. 55 tons per machine unit.

Initiatives to achieve our CO<sub>2</sub> reduction goals until 2030:

We are planning a 60% reduction in Scope 1 and Scope 2 mainly in the areas where emissions reduction is feasible, and a 20% reduction in Scope 3 mainly in the supply chain. While Tokyo Global Headquarters has for example already introduced electricity with zero CO<sub>2</sub> emissions since April 2020, we will further introduce green electricity at our plants in Iga and Nara, and in other group companies in Japan in 2021. AG has already achieved about 80% green power procurement at all of its locations, and is introducing further measures towards 100%. In addition, we will introduce a biomass thermo-electric supply system using wood chips at the Iga plant within this year (2021), which will contribute to the disposal of waste materials in the neighboring areas. In material procurement, we will introduce a state-of-the-art electric furnace at Watanabe Steel Works (Shimane prefecture, Japan), a domestic group company, for castings which by their nature account for large amounts of CO<sub>2</sub> emissions from production and transportation. This facility will produce two-thirds of castings required for domestic production. As a result, imports of casting from overseas can be reduced. CO<sub>2</sub> emissions from the procurement of castings will be reduced by a total of 32,000 tons, representing an emissions reduction of about 70% compared to 2020. This will result in competitive advantages in terms of our supply chain. In addition, we will introduce solar power

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generation equipment at Iga and Nara campuses and introduce company vehicles with high fuel-efficiency. AG plans to replace all company-owned vehicles with electric vehicles by 2030. Regarding CO<sub>2</sub> reduction in the supply chain, we requested cooperation in CO<sub>2</sub> reduction at our so-called Partner Summit, in Japan and Europe. We will share our own CO<sub>2</sub> reduction know-how to build a win-win relationship with our suppliers.

DMG MORI CO<sub>2</sub> emissions reduction target:  
**30% reduction by 2030** in CO<sub>2</sub> emissions (base year 2019)

Scope (Scope 1, Scope 2, upstream categories of Scope 3)

2019 Actual		➔	2030 Target
Total emissions by the Group	Emissions per unit produced		Emissions per unit produced
Approx. 784,000t	78t/unit	55t/unit	

For 2021, we aim to commit to emissions reduction targets, to get those targets officially validated by the Science Based Targets initiative (SBTi), to announce our targets to our stakeholders, and to report and track target process annually.

**Table 4** DMG MORI's global carbon footprint

Scope	Source of Emission	2019		2020	
		tCO <sub>2</sub> ('000)	Share	tCO <sub>2</sub> ('000)	Share
Scope 1	Internal Combustion				
	Business Travel with own Vehicles	43	5%	34	7%
Scope 2	External provision of Energy (Electricity)	70	9%	43	9%
Scope 3	Category 1: Purchased Material	581	74%	352	72%
	Category 3: Upstream Processes not included in Scope 1 or Scope 2	17	2%	17	3%
	Category 4: Transports	31	4%	18	4%
	Category 5: Waste	1	0%	1	0%
	Category 6: Business Travel (Flights, Trains, Ferry, Bus, Rental Cars + Taxis)	23	3%	8	2%
	Category 7: Employees Commute (e.g. Cars, Public Transport)	18	2%	15	3%
TOTAL CO <sub>2</sub> Footprint '000 ton		784	100%	488	100%

source: DMG MORI Integrated Report 2020

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Recommendations and Supporting Recommended Disclosures	Disclosure	Reference
<b>[Governance]</b> Disclose the organization's governance around climate related risks and opportunities.		
a) Describe the board's oversight of climate-related risks and opportunities.	✓	CDP2021
b) Describe management's role in assessing and managing climate-related risks and opportunities.	✓	CDP2021
<b>[Strategy]</b> Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	✓	CDP2021
b) Describe the impact of climate related risks and opportunities on the organization's businesses, strategy, and financial planning.	✓	CDP2021
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.		
<b>[Risk Management]</b> Disclose how the organization identifies, assesses, and manages climate-related risks.		
a) Describe the organization's processes for identifying and assessing climate-related risks.	✓	
b) Describe the organization's processes for managing climate-related risks.		
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.		
<b>[Metrics and Targets]</b> Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.		
a) Disclose the metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process.	✓	
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	✓	Carbon Footprint report, Integrated Report 2020
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	✓	Integrated Report 2020