

# Welcome to your CDP Climate Change Questionnaire 2020

## C0. Introduction

### C0.1

#### **(C0.1) Give a general description and introduction to your organization.**

Micron is comprised of a team of visionaries and trailblazers, designing and building advanced semiconductor technologies. From mobile devices to connected automobiles, to supercomputers and cloud servers—our innovative memory and storage solutions are used in things that we depend on and use every day. They are foundational to the technological advancements that are changing how the world uses information. Today, we are a global leader in the semiconductor industry with a track record of innovation and industry advancement that includes over 26,000 patents. Our multinational diversity, manufacturing scale, and broad product portfolio enable us to advance new ideas and develop technologies that can transform what’s possible. Our broad portfolio of silicon-to-semiconductor solutions starts with foundational dynamic random-access memory (DRAM), NAND, and NOR Flash memory and extends to solid state drives, modules, multichip packages, and other semiconductor systems. We work with today’s leading brands and original equipment manufacturers (OEMs) to enable the world’s most innovative computing, consumer, enterprise storage, data center, mobile, embedded and automotive applications. Micron strives to build and operate sustainable world-class facilities around the world that enable excellence in safety, reliability, and cost. Through pollution prevention, reclamation, and recycling efforts, Micron strives to reduce the burden on air, water and land resources. Continuous improvement of our environmental performance is a long-term commitment. Visit [micron.com/environment](http://micron.com/environment) for more information. We take a proactive approach to environmental stewardship, occupational health and safety, and high-quality product standards. An integral part of this mission is a proactive approach to environmental compliance and protection that serves our team members, customers and communities in which we operate. Compliance with applicable environmental regulations is considered a minimum standard. Micron implements additional programs where appropriate to provide greater environmental performance and protection, demonstrating the responsibility it feels towards its local and global communities. Continuous improvement of our environmental performance is a long-term commitment of Micron’s business mission.

### C0.2

#### **(C0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2019	December 31, 2019	No

## C0.3

**(C0.3) Select the countries/areas for which you will be supplying data.**

- China
- Japan
- Malaysia
- Singapore
- Taiwan, Greater China
- United States of America

## C0.4

**(C0.4) Select the currency used for all financial information disclosed throughout your response.**

- USD

## C0.5

**(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.**

- Operational control

# C1. Governance

## C1.1

**(C1.1) Is there board-level oversight of climate-related issues within your organization?**

- Yes

### C1.1a

**(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.**

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Micron's CEO sits on the Board of Directors and leads executive oversight of Micron's sustainability efforts, including climate change, which are driven by our Sustainability Council, a team of senior leaders responsible for developing all aspects of sustainability strategy for the company. The Sustainability Council receives oversight and approval from an executive leadership team reporting to the CEO.

Chief Operating Officer (COO)	While not a member of the Board of Directors, our Executive VP of Global Operations (equivalent to Chief Operating Officer) has executive authority and oversight of our corporate Environment, Health, and Safety function, which has primary responsibility for our operational climate strategy and planning.
Chief Procurement Officer (CPO)	While not a member of the Board of Directors, this individual has oversight of our supply chain sustainability efforts, including expectations that suppliers report on their climate performance.
Chief Sustainability Officer (CSO)	While not a member of the Board of Directors, our VP of Compliance, Employment, Sustainability and Trade (equivalent to Chief Sustainability Officer) has oversight of our corporate sustainability strategy, including actions related to climate change
Board-level committee	Members of the Board’s Governance and Sustainability Committee: The Governance and Sustainability Committee of Micron’s Board of Directors oversees the company’s development and integration of sustainability efforts, including climate change.

## C1.1b

**(C1.1b) Provide further details on the board’s oversight of climate-related issues.**

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> <li>Reviewing and guiding strategy</li> <li>Reviewing and guiding major plans of action</li> <li>Reviewing and guiding risk management policies</li> <li>Reviewing and guiding annual budgets</li> <li>Setting performance objectives</li> <li>Monitoring implementation and performance of objectives</li> <li>Monitoring and overseeing progress against goals and</li> </ul>	<p>Micron’s sustainability and climate-related strategy, action plans, performance objectives, and progress against goals and targets are presented to the Board’s Governance and Sustainability committee at least annually. Risk management policies and significant risk findings are reported to the Board’s Audit Committee.</p> <p>These efforts are developed as follows: At the direction of Micron’s Chief Executive Officer and President, our Sustainability Council, a team of senior leaders including the Vice President of Compliance, Employment, Sustainability and Trade, have responsibility for developing all aspects of the company’s sustainability strategy, with oversight and approval from an executive leadership team, Additionally, Micron’s Risk Committee, a team of senior leaders including the CFO, review and guide risk management objectives including climate-related risks. The Sustainability Council and Risk Committee</p>

	targets for addressing climate-related issues	drive our climate strategy and focuses on how we can improve the impact of our operations on the environment.
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## C1.2

**(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.**

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Sustainability Officer (CSO) ☞ <sup>1</sup>	Both assessing and managing climate-related risks and opportunities	Quarterly
Sustainability committee ☞ <sup>2</sup>	Both assessing and managing climate-related risks and opportunities	Quarterly

☞<sup>1</sup>Micron's VP Compliance, Employment, Sustainability and Trade, equivalent to our CSO

☞<sup>2</sup>Micron's management-level Sustainability Council, described in C1.2a.

## C1.2a

**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).**

Micron's Vice President of Compliance, Employment, Sustainability and Trade is the executive lead of our Sustainability Council which was initiated at the direction of the Chief Executive Officer and President. The Sustainability Council is comprised of a team of senior leaders representing the various aspects of sustainability, including supply chain, procurement, sales, technology development, and global manufacturing which accounts for the majority of Micron's Scope 1 and Scope 2 GHG emissions. The Sustainability Council is enabling an integrated strategy from technology development through high volume manufacturing to proactively align and execute on environmental initiatives and goals. On a periodic basis, the Sustainability Council monitors, among other things, climate-related risk and data, and tracks progress towards goals. Micron has also deployed an Environmental Sustainability operations team focused on managing our Scope 1 and 2 emissions, which reports out to the Sustainability Council and senior executives on a periodic basis. The Sustainability Council and Environmental Sustainability operations team drive our climate strategy and focuses on how we can improve the impact of our operations on the environment.

## C1.3

**(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

## C1.3a

**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).**

Entitled to incentive	Type of incentive	Activity incentivized	Comment
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	Every Team Member is eligible for monetary and non-monetary recognition for their contribution towards sustainability and climate-related activities.
All employees	Non-monetary reward	Emissions reduction project Energy reduction project Efficiency project	Every Team Member is eligible for monetary and non-monetary recognition for their contribution towards sustainability and climate-related activities.
All employees	Monetary reward	Behavior change related indicator	Every Team Member is eligible for monetary and non-monetary recognition for their contribution towards sustainability and climate-related activities. The Micron Global Wellness program promotes healthy lifestyles for all employees, including energy saving tips, water conservation and waste reduction. All employees can participate and get rewarded for program completion. "Desirable Trash" Award where employees can take home scrap material (i.e., crates, boxes, tools, etc.) that would otherwise be landfilled or incinerated (creating GHG) and capture a picture of how it was put to beneficial use. Team Members vote on the most creative project and the recipient receives the "Desirable Trash" Award.
All employees	Monetary reward	Emissions reduction target	A component of the company incentive (bonus) pay for Senior executives, and all other employees, is based on our sustainability performance, including establishment and management of emissions reduction targets.

## C2. Risks and opportunities

### C2.1

**(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?**

Yes

#### C2.1a

**(C2.1a) How does your organization define short-, medium- and long-term time horizons?**

	From (years)	To (years)	Comment
Short-term	0	1	Time horizons used for enterprise risk assessment when evaluating likelihood
Medium-term	1	5	Time horizons used for enterprise risk assessment when evaluating likelihood
Long-term	5	10	Time horizons used for enterprise risk assessment when evaluating likelihood

#### C2.1b

**(C2.1b) How does your organization define substantive financial or strategic impact on your business?**

A substantive strategic impact on Micron’s business is one which directly and significantly affects the company’s markets or ability to manufacture its products. One indicator used to define substantive strategic impact is customer ratings of Micron performance, which frequently include climate change indicators.

### C2.2

**(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.**

**Value chain stage(s) covered**

- Direct operations
- Upstream
- Downstream

**Risk management process**

A specific climate-related risk management process

### **Frequency of assessment**

Annually

### **Time horizon(s) covered**

Short-term

Medium-term

Long-term

### **Description of process**

Enterprise Risk Management (ERM) at Micron is a comprehensive program that uses risk information to formulate strategies, processes and decisions that enable the company to achieve its objectives. ERM establishes a unified approach to risk management that helps Micron achieve a shared understanding of risks and make informed business decisions. Micron's Risk Committee comprises of the CEO Staff members who monitor significant risks. ERM reports significant risks to the Audit Committee of Micron's Board of Directors quarterly. Climate Change Risk and overall Sustainability Risk is assessed as part of this process.. In 2019, Micron completed the revision of the climate-related risk assessment, which included "business as usual" and 2-degree scenarios for 2020, 2030, and 2040. We intend to review and update these materials on a periodic basis.

Micron uses a standard ERM process to ensure risks, including climate-related risks, can be incorporated into decision-making. The ERM process is aligned with Micron's Strategic and Business Planning Process to ensure appropriate priorities are set and company strategic objectives are met. This creates a unified approach to identify, assess, prioritize, treat, monitor and report short-, medium-and long-term risks across the company, including in direct operations and upstream and downstream value chains. As part of the strategic planning process and day-to-day management of the business, internal and external risks that may affect the achievement of our objectives are identified. Information and communication channels are in place to make the organization aware of risks that fall into their area of responsibility.

Micron uses a standardized risk taking process designed in accordance to the ISO31000:2018 to ensure risks, including climate-related risks, can be incorporated into decision-making. This creates a unified approach to identify, assess, prioritize, treat, monitor and report short-, medium-and long-term risks across the company, including in direct operations and upstream and downstream value chains.

Risks and opportunities are then prioritized based upon the overall risk exposure, considered as a function of likelihood (how likely is the risk to occur without treatment) and impact of the occurrence (how impactful is the risk without treatment). Micron leaders are accountable for managing risks affecting their area of responsibility.

Climate-related risks and opportunities are identified and prioritized by EHS and Sustainability, considering the following criteria: business continuity, impact to brand/reputation, relevance to regional operations, alignment with Micron business

strategy, impact to communities, and compliance considerations. Micron routinely monitors greenhouse gas and energy efficiency regulations and policy to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate.

One example of our risk/opportunity identification and management process includes the risk of enhanced reporting obligations. The likelihood of this occurring and how impactful it would be without treatment is evaluated to determine the inherent risk and then treatment details, including who, what, and when are determined and tracked to closure. The treatments for this example includes monitoring greenhouse gas and energy efficiency regulations and policy to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate. When applicability is determined, an action plan is developed and monitored through execution.

## C2.2a

### (C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Micron routinely monitors greenhouse gas and energy efficiency regulations and policy (such as carbon taxes) to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate. This is managed through an enterprise wide EHS data management system that identifies and monitors compliance with applicable regulations.
Emerging regulation	Relevant, always included	Our Global Environmental, Health & Safety, Legal, and Government Affairs organizations monitor emerging legislative and regulatory programs, such as carbon taxes and product energy efficiency regulations, on a global level to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate.
Technology	Relevant, always included	Micron low power devices support sustainability and climate change initiatives in our customer's supply chain. Failure to meet such spec might contribute to reduced demand for products, and Micron's Technology Development continues to focus on development in this area.
Legal	Relevant, always included	Micron routinely monitors legal requirements related to greenhouse gases (such as legal limits or reporting requirements), energy efficiency regulations, and other issues to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate. This is managed through an enterprise wide EHS



		data management system that identifies and monitors compliance with applicable regulations.
Market	Relevant, always included	Micron routinely monitors market trends and customer demand related to improved product power consumption and greenhouse gas performance to understand and evaluate impacts to our business and our customers and ensure that we continue to address customer expectations and win business.
Reputation	Relevant, always included	Micron's performance on climate change may affect the company's reputation. We take our reputation with local communities, our employees, regulators and customers very seriously and reputational consideration is incorporated into our risk criteria.
Acute physical	Relevant, always included	Micron considers risks arising from extreme weather events, such as cyclones, hurricanes, or floods in our business continuity program. which may increase as a result of climate change.
Chronic physical	Relevant, always included	Micron included chronic issue impacts on our facilities (such as availability of water), workforce (such as health and productivity), and communities such as sea level rise, increased temperatures, and changes in water availability in our 2018-19 climate risk assessment.

## C2.3

**(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes

## C2.3a

**(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.**

### Identifier

Risk 1

### Where in the value chain does the risk driver occur?

Direct operations

### Risk type & Primary climate-related risk driver

Current regulation  
Carbon pricing mechanisms

### Primary potential financial impact

Increased direct costs

### Company-specific description

Micron operates in some countries where carbon taxes and greenhouse gas regulations apply or are under discussion, specifically Singapore, where the Carbon Pricing Act sets a tax of SGD \$5 per tonne CO<sub>2</sub>e on 80% of facility GHG emissions from 2019 to 2023. With Micron's approximately 1.1 million metric tons of Scope 1 emissions annually in Singapore, this has an estimated potential cost of SGD \$4.5 million annually (approximately USD \$3.3 million at August 2020 exchange rates). This is a cost impact on our operations and may require a carbon conservation plan, an annual report and/or time from designated personnel.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

3,300,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

This is an annual potential financial cost, calculated by multiplying SGD \$5 cost/tCO<sub>2</sub>e established by the Singapore Carbon Pricing Act by the August 2020 exchange rate and by 80% of Micron's estimated annual tCO<sub>2</sub>e emissions.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron is taking action on our greenhouse gas emissions as a company in a way that affects this risk. However, these actions are taken for a range of reasons not specifically related to this risk, and not included in the cost of response to this risk. The cost of our specific response to this risk, related to monitoring GHG and energy efficiency regulations, evaluating potential impacts, reporting required by regulation, and determining next steps resulting from this specific policy are de minimis.

**Comment**

Micron routinely monitors greenhouse gas and energy efficiency regulations and policy to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 6

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

**Primary potential financial impact**

Increased direct costs

**Company-specific description**

In the past few years intensity and frequency of typhoons have been increasing, particularly in Asian countries where Micron operates. These events have caused temporary power failures and short-term interruptions, but so far impact has been controlled and not considered significant.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Micron realizes that there is potential for financial impact. Potential financial impact has not yet been determined

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

**Comment**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 4

**Where in the value chain does the risk driver occur?**

Downstream

**Risk type & Primary climate-related risk driver**

Market

Changing customer behavior

**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Company-specific description**

As awareness of sustainability and climate change increases the design of new products with higher performance and reduced environmental impact could be key to maintaining and increasing our customers' portfolio.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Micron realizes that there is potential for financial impact. Potential financial impact has not yet been determined

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

**Comment**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 5

**Where in the value chain does the risk driver occur?**

Downstream

**Risk type & Primary climate-related risk driver**

Market

Changing customer behavior

**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Company-specific description**

Corporate strategies for sustainability and climate change may become critical indicators for customers and investors.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Micron realizes that there is potential for financial impact. Potential financial impact has not yet been determined

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

**Comment**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.  
Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 7

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Chronic physical  
Rising mean temperatures

**Primary potential financial impact**

Increased indirect (operating) costs

**Company-specific description**

Reduced revenue from decreased production capacity (e.g. employee productivity, equipment degradation, transportation difficulties)  
Temperature extremes increase cooling costs which can be nonlinear with temperatures; decrease productivity by contributing to heat-related illnesses, increase equipment degradation, and negatively affect transportation infrastructure

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Micron realizes that there is potential for financial impact. Potential financial impact has not yet been determined

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

**Comment**

Temperature extremes increase cooling costs which can be nonlinear with temperatures; decrease productivity by contributing to heat-related illnesses, increase equipment degradation, and negatively affect transportation infrastructure. Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation  
Carbon pricing mechanisms

**Primary potential financial impact**

Increased direct costs

**Company-specific description**

Micron operates in some countries where carbon taxes and greenhouse gas regulations apply or are under discussion, specifically Singapore, where the Carbon Pricing Act establishes that the carbon tax rate will be revised by 2023 and will be increased to between SGD \$10 and SGD \$15 per tonne CO<sub>2</sub>e from 2019 to 2023. With Micron's approximately 1.1 million metric tons of Scope 1 emissions annually in Singapore, this has an estimated potential cost of between SGD \$9-13 million annually (approximately USD \$6.5-10 million at August 2020 exchange rates). This is likely to have a cost impact on our operations and may require a carbon conservation plan, an annual report and/or time from designated personnel.

**Time horizon**

Long-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

6,500,000

**Potential financial impact figure – maximum (currency)**

10,000,000

**Explanation of financial impact figure**

This is an annual potential financial cost, calculated by multiplying expected cost/tCO<sub>2</sub>e minimum (SGD \$10) and maximum (SGD \$15) established by the Singapore Carbon Pricing Act by the August 2020 exchange rate and by 80% of Micron's estimated annual Singapore tCO<sub>2</sub>e emissions.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Micron is taking action on our greenhouse gas emissions as a company in a way that affects this risk. However, these actions are taken for a range of reasons not specifically related to this risk, and are not included in the cost of response to this risk. The cost of our specific response to this risk, related to monitoring GHG and energy efficiency regulations, evaluating potential impacts, reporting required by regulation, and determining next steps resulting from this specific policy are de minimis.

**Comment**



Micron routinely monitors greenhouse gas and energy efficiency regulations and policy to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

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**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Market

Changing customer behavior

**Primary potential financial impact**

Increased direct costs

**Company-specific description**

Micron operates in some countries where increasing demand for renewable energy is driven by both customer expectations and by government regulation. Specifically in Taiwan, these expectations may require Micron to adopt at least 10% renewable energy by 2025. Micron purchases approximately 2 million MWh of electricity annually in Taiwan. With an estimated grid rate of US\$100 per MWh and estimated price premium of approximately 2x grid rates for high-quality additional renewable electricity, this may result in additional energy costs of approximately US\$20 million annually unless renewable energy costs decline or expectations change.

**Time horizon**

Long-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

20,000,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

### **Explanation of financial impact figure**

This is an annual potential financial cost, calculated by multiplying estimated annual energy use (2 million MWh) by the estimated percent of renewable electricity needed by 2025 (10%) and by estimated price premium for renewable energy (US\$100/MWh).

### **Cost of response to risk**

0

### **Description of response and explanation of cost calculation**

Micron is taking action on our energy use as a company in a way that affects this risk. However, these actions are taken for a range of reasons not specifically related to this risk, and are not included in the cost of response to this risk. The cost of our specific response to this risk, related to monitoring and estimating energy use, evaluating potential impacts, reporting required by regulation, and determining next steps resulting from this specific policy are de minimis.

### **Comment**

Micron routinely monitors greenhouse gas and energy efficiency regulations and policy to understand and evaluate impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

## **C2.4**

**(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes

### **C2.4a**

**(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.**

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#### **Identifier**

Opp1

#### **Where in the value chain does the opportunity occur?**

Direct operations

#### **Opportunity type**

Resource efficiency

#### **Primary climate-related opportunity driver**

Use of more efficient production and distribution processes

**Primary potential financial impact**

Reduced indirect (operating) costs

**Company-specific description**

Micron has a year-on-year track record of implementing projects to improve the energy efficiency of our tools and systems by reducing operational costs, as well as replacing less efficient equipment with new equipment with higher energy efficiency .

Furthermore, a new energy procurement approach is under development to value green energy in our supplier evaluation process. Identified projects include:

- Exhaust system optimization and leak reduction;
  - HVAC optimization/upgrade to high efficiency including pressure optimization, make up air unit improvement, and exhaust balance/optimization,
  - Replacement of lighting from Fluorescent to LED light and installation of light sensors,
  - Mechanical upgrades to higher efficiency motors, implementation of advanced control strategies, and optimization.
  - Retrofitting variable speed drives to pumps.
  - Compressed Air system optimization including leak reduction, consumption optimization.
  - Use of free cooling during winter season.
  - Replacement of old equipment with high efficiency systems, including chillers, pumps, motors, fans.
  - Various projects including mechanical upgrades, implementation of advanced control strategies, and optimization. Optimization of utilities consumption (power, CDA, heat)
- We has taken this opportunity across our manufacturing operations to implement improvements that may have a substantive financial or strategic impact on our business. In CY19 we invested in energy efficiency improvements across our network, particularly in Taiwan and Singapore (refer to cost reported below)

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

35,000,000

**Potential financial impact figure – maximum (currency)**

58,000,000

**Explanation of financial impact figure**

Financial impact estimates are based on the annual expected financial benefit of reduced energy use (\$5,800,000) resulting from improved building controls, HVAC, efficient motors and drives, replacing machinery, and implementing other energy efficient processes, multiplied by the estimated minimum six year lifetime of these projects to calculate the minimum impact figure, and by the estimated maximum 10 year project lifetime to calculate the maximum impact figure.

**Cost to realize opportunity**

1,200,000

**Strategy to realize opportunity and explanation of cost calculation**

Micron continuously identifies energy saving projects and evaluates cost/benefit to allocate necessary resources (capex) . Cost reported here refers to total cost for implementing energy reduction projects during CY19, including building controls, HVAC, efficient motors and drives, replacing machinery, and implementing other energy efficient processes.

**Comment**

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**Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

64% of Micron's revenue comes from low-carbon (energy efficient) products, such as our low-power LPDDR5 DRAM memory product. Climate change regulations and customer interest in these products should maintain or increase the demand for these products and potentially drive innovation in the design of new products.

**Time horizon**

Short-term

**Likelihood**

Likely

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

15,000,000,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

This annual figure assumes the continuation of Micron's FY20 trend, in which approximately 64% of annual revenue from \$23.4 billion dollars generated from low-carbon (energy efficient) products such as low-power DRAM memory.

**Cost to realize opportunity**

0

**Strategy to realize opportunity and explanation of cost calculation**

Micron routinely monitors market trends in terms of power consumption to understand and evaluate impacts to, and opportunities for, our business and our customers. These activities are embedded into business-as-usual activities and are not considered an additional cost specific to this opportunity.

**Comment**

Micron routinely monitors market trends in terms of power consumption to understand and evaluate impacts to, and opportunities for, our business and our customers. Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate. Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

---

**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

**Opportunity type**

Markets

**Primary climate-related opportunity driver**

Access to new markets

### **Primary potential financial impact**

#### **Company-specific description**

The design of low power products could create an opportunity to gain new markets and customers

Improvements in our climate change strategy could be reflected in our customer's scorecards and might increase the demand of our products.

#### **Time horizon**

Medium-term

#### **Likelihood**

Likely

#### **Magnitude of impact**

Medium-high

#### **Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

#### **Potential financial impact figure (currency)**

#### **Potential financial impact figure – minimum (currency)**

#### **Potential financial impact figure – maximum (currency)**

#### **Explanation of financial impact figure**

Potential financial impact has not yet been determined

#### **Cost to realize opportunity**

0

#### **Strategy to realize opportunity and explanation of cost calculation**

Micron routinely monitors market trends in terms of power consumption to understand and evaluate impacts to, and opportunities for, our business and our customers

#### **Comment**

Micron routinely monitors market trends in terms of power consumption to understand and evaluate impacts to, and opportunities for, our business and our customers.

Micron routinely monitors conditions and potential impacts to, and opportunities for, our business, customers, and the communities where we operate.

Management activities are embedded into business-as-usual activities within the business and are therefore not additional.

---

**Identifier**

Opp5

**Where in the value chain does the opportunity occur?**

**Opportunity type**

**Primary climate-related opportunity driver**

**Primary potential financial impact**

**Company-specific description**

**Time horizon**

**Likelihood**

**Magnitude of impact**

**Are you able to provide a potential financial impact figure?**

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

**Comment**

## C3. Business Strategy

### C3.1

**(C3.1) Have climate-related risks and opportunities influenced your organization’s strategy and/or financial planning?**

Yes, and we have developed a low-carbon transition plan

#### C3.1a

**(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?**

Yes, quantitative

#### C3.1b

**(C3.1b) Provide details of your organization’s use of climate-related scenario analysis.**

Climate-related scenarios and models applied	Details
2DS RCP 4.5 RCP 8.5	<p>Micron has conducted an analysis of value at risk to the organization under a “business as usual” (RCP8.5) and a “2 degree C” (2DS/RCP4.5) scenario, using econometric modelling, facility valuations, and potential climate-related impacts to model potential financial impacts of climate change in 2020, 2030, and 2040. This analysis primarily focused on physical and transition risks to our facilities and operations, with additional exploration of supply chain, reputation, market, and other risks.</p> <p>The assessment highlighted physical risks, especially from temperature extremes and storm damage, to Micron’s high-value manufacturing facilities in Singapore, Taiwan, and Japan. While these facilities face growing physical risks over time, these risks do not differ significantly between the scenarios during the time periods reviewed (although the scenario risks begin to differ significantly when even longer time horizons are explored). Transition risks were found to be significantly smaller in size than physical risks, but much more variable between scenarios. The most significant and variable transition risk was found to be carbon pricing as a result of Micron’s relatively large scope 1 and 2 emissions, with materials cost as another significant risk and opportunities to take advantage of energy and resource efficiency given Micron’s significant use of energy, water and raw materials.</p> <p>These results of the scenario analysis helped inform Micron’s decision to establish a strategic focus and goals for our environmental footprint, in particular our aspirational environmental goals to reduce our absolute GHG emissions by</p>



	40%, deploy 100% renewable energy where available, achieve 100% water recycling, reuse and restoration, and zero waste to landfill. They are also expected to inform future facility investments and siting decisions.
--	--

### C3.1d

**(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.**

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Climate-related risks and opportunities have influenced Micron’s product and service strategy primarily as a result of existing and anticipated demand for low-power, energy-efficient memory and storage products. Low-power dynamic random access memory (LPDRAM) is an important product for many of our customers manufacturing servers, computers, cell phones, and other electronic equipment. We currently offer these products to customers and communicate with them about its benefits, and continue to invest in R&D to improve these products (see investment in R&D below) over the next several years.
Supply chain and/or value chain	Yes	Climate-related risks and opportunities have influenced Micron’s supply chain strategy in two primary ways. First, our supply chain Scope 3 emissions are significant and suppliers have climate-related risks that may affect Micron’s own business, so we expect our suppliers to consider these risks, report to CDP, and supply basic information about emissions, management, and risks to Micron. Second, Micron’s capital equipment suppliers play a significant role in Micron’s own energy use and emissions through the efficiency of the equipment they sell to Micron, and we expect these suppliers to develop and sell increasingly efficient equipment that helps Micron achieve our environmental goals. In both of these cases, we are expanding communication about these expectations to suppliers in CY2020, gathering relevant information, and evaluating suppliers based on their performance on these criteria. This evaluation has been expanded in CY2020 and is included in Micron procurement decisions.
Investment in R&D	Yes	Micron’s investments in R&D are influenced by climate-related risks and opportunities in two key areas:

		<p>manufacturing process development, and product development. In manufacturing processes, Micron’s Technology Development (TD) function establishes the processes used to manufacture future generations of Micron products. TD is investing in reducing GHG emissions and increasing energy efficiency of the processes that are being researched for high-volume manufacturing in the medium term (next 3-5 years) and long term (5 years plus).</p> <p>In product development, TD is investing in developing low-power memory and storage products to improve energy efficiency of electronic devices including computers, cell phones, and servers manufactured by our customers in the medium term (next 3-5 years) and long term (5 years plus).</p>
Operations	Yes	<p>Climate-related risks and opportunities have encouraged Micron to focus our operations strategy on developing and implementing significant environmental goals. Specifically, we have set long-term (10 years+) aspirational goals for a 40% absolute reduction in scope 1&amp;2 GHG emissions; 100% renewable energy use where available; 100% water reuse, recycling, and restoration; and zero waste sent to landfill. We are supporting these goals with significant capital investment amounting to about \$1 billion over the next 5-7 years. We have also set time-bound goals of a 55% reduction in Scope 1&amp;2 emissions per unit of production (vs CY18 base) by end of CY22, 75% reduction in Scope 1&amp;2 emissions per unit of production (vs CY18 base) by end of CY30, and 100% renewable energy adoption in the U.S. by end of CY25.</p>

### C3.1e

**(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures	<p>Situation: Micron’s performance regarding climate change, including our emissions reduction goals and performance as well as management of risks related to materials and water availability, influences growing number of Micron customers, investors, team members in their decisions to buy from, invest in, or work for the company.</p> <p>Task: In 2019, Micron determined that the company should take</p>

		<p>additional action so that we can continue to meet stakeholder expectations regarding emissions reduction and climate risk management.</p> <p>Action: In early 2020, Micron decided to invest approximately 2% of its capital expenditures, equivalent to about \$1 billion, over the next 5-7 years toward achieving a set of ambitious environmental goals. These long-term aspirational goals include a 40% absolute reduction in Scope 1&amp;2 GHG emissions; adoption of 100% renewable energy where available; 100% water reuse, recycling, and restoration; and zero waste to landfill.</p> <p>Result: As a result of the decision to allocate capital expenditures toward environmental goals, Micron has been able to develop a prioritized list of investment projects that will enable us to achieve a set of medium-term environmental targets by the end of 2023, including emissions reduction, energy efficiency, and water reuse projects designed to support the company's time-bound goals of a 55% reduction in Scope 1&amp;2 emissions per unit of production (vs CY18 base) by end of CY22, 75% reduction in Scope 1&amp;2 emissions per unit of production (vs CY18 base) by end of CY30, and 100% renewable energy adoption in the U.S. by end of CY25.</p>
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### C3.1f

**(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).**

## C4. Targets and performance

### C4.1

**(C4.1) Did you have an emissions target that was active in the reporting year?**

Intensity target

### C4.1b

**(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).**

---

**Target reference number**

Int 1

**Year target was set**

2020

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (market-based)

**Intensity metric**

Metric tons CO<sub>2</sub>e per unit of production

**Base year**

2018

**Intensity figure in base year (metric tons CO<sub>2</sub>e per unit of activity)**

0.000114

**% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure**

100

**Target year**

2022

**Targeted reduction from base year (%)**

55

**Intensity figure in target year (metric tons CO<sub>2</sub>e per unit of activity) [auto-calculated]**

0.0000513

**% change anticipated in absolute Scope 1+2 emissions**

20

**% change anticipated in absolute Scope 3 emissions**

0

**Intensity figure in reporting year (metric tons CO<sub>2</sub>e per unit of activity)**

0.0000835

**% of target achieved [auto-calculated]**

48.644338118

**Target status in reporting year**

New

**Is this a science-based target?**

No, but we anticipate setting one in the next 2 years

**Please explain (including target coverage)**

Target: reduce total Scope 1 and Scope 2 (market-based) emissions by 55% per unit of production by 2022 from 2018 levels.

Micron plans to reduce the intensity indicator through the implementation of multiple

emission reduction activities, like renewable energy procurement and reduction of process related emissions.

---

**Target reference number**

Int 2

**Year target was set**

2020

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (market-based)

**Intensity metric**

Metric tons CO<sub>2</sub>e per unit of production

**Base year**

2018

**Intensity figure in base year (metric tons CO<sub>2</sub>e per unit of activity)**

0.000114

**% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure**

100

**Target year**

2030

**Targeted reduction from base year (%)**

75

**Intensity figure in target year (metric tons CO<sub>2</sub>e per unit of activity) [auto-calculated]**

0.0000285

**% change anticipated in absolute Scope 1+2 emissions**

134

**% change anticipated in absolute Scope 3 emissions**

0

**Intensity figure in reporting year (metric tons CO<sub>2</sub>e per unit of activity)**

0.0000835

**% of target achieved [auto-calculated]**

35.6725146199

**Target status in reporting year**

New

**Is this a science-based target?**

No, but we anticipate setting one in the next 2 years

**Please explain (including target coverage)**

Target: reduce total Scope 1 and Scope 2 (market-based) emissions by 75% per unit of production by 2030 from 2018 levels.

Micron plans to reduce the intensity indicator through the implementation of multiple emission reduction activities, like renewable energy procurement and reduction of process related emissions.

## C4.2

**(C4.2) Did you have any other climate-related targets that were active in the reporting year?**

Target(s) to increase low-carbon energy consumption or production

Other climate-related target(s)

## C4.2a

**(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.**

---

**Target reference number**

Low 1

**Year target was set**

2020

**Target coverage**

Country/region

**Target type: absolute or intensity**

Absolute

**Target type: energy carrier**

Electricity

**Target type: activity**

Consumption

**Target type: energy source**

Renewable energy source(s) only

**Metric (target numerator if reporting an intensity target)**

Percentage

**Target denominator (intensity targets only)**

**Base year**

2018

**Figure or percentage in base year**

0

**Target year**

2025

**Figure or percentage in target year**

100

**Figure or percentage in reporting year**

0

**% of target achieved [auto-calculated]**

0

**Target status in reporting year**

New

**Is this target part of an emissions target?**

Yes, INT 1

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Please explain (including target coverage)**

Micron plans to adopt 100% renewable energy for its U.S. operations by the end of CY25.

## C4.2b

**(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.**

---

**Target reference number**

Oth 1

**Year target was set**

2017

**Target coverage**

Country/region

**Target type: absolute or intensity**

Absolute

**Target type: category & Metric (target numerator if reporting an intensity target)**

Energy consumption or efficiency

Other, please specify

Percentage

**Target denominator (intensity targets only)**

**Base year**

2016

**Figure or percentage in base year**

0

**Target year**

2022

**Figure or percentage in target year**

10

**Figure or percentage in reporting year**

5

**% of target achieved [auto-calculated]**

50

**Target status in reporting year**

Underway

**Is this target part of an emissions target?**

Yes, INT 1

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Please explain (including target coverage)**

Energy saving target, including fuel and purchased energy (electricity, steam, cooling). % emissions in scope and base year emissions are calculated as total Scope 2 (location based) and Scope 1 from fuel consumption (all energy related sources). Micron defined a multi-year goal to achieve at least 10% energy savings (measured in KWh saved compared to 2016 baseline year energy use) by 2022. With additional projects implemented in CY2019, we achieved a cumulative 5% energy savings compared to CY2016 baseline , corresponding to 50% of the target.



## C4.3

**(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.**

Yes

### C4.3a

**(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO<sub>2</sub>e savings.**

	Number of initiatives	Total estimated annual CO <sub>2</sub> e savings in metric tonnes CO <sub>2</sub> e (only for rows marked *)
Under investigation		
To be implemented*	23	50,826
Implementation commenced*	39	14,848
Implemented*	56	22,319
Not to be implemented		

### C4.3b

**(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.**

#### Initiative category & Initiative type

Energy efficiency in buildings  
Heating, Ventilation and Air Conditioning (HVAC)

#### Estimated annual CO<sub>2</sub>e savings (metric tonnes CO<sub>2</sub>e)

5,759

#### Scope(s)

Scope 2 (market-based)

#### Voluntary/Mandatory

Voluntary

#### Annual monetary savings (unit currency – as specified in C0.4)

1,504,065

#### Investment required (unit currency – as specified in C0.4)

31,128

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Combination of projects on HVAC optimization/upgrade to high efficiency: pressure optimization, make up air unit improvement, exhaust balance/optimization

---

**Initiative category & Initiative type**

Energy efficiency in buildings  
Lighting

**Estimated annual CO2e savings (metric tonnes CO2e)**

823

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

269,036

**Investment required (unit currency – as specified in C0.4)**

267,390

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Replaced lighting from Fluorescent to LED light, installation of light sensors

---

**Initiative category & Initiative type**

Energy efficiency in buildings  
Motors and drives

**Estimated annual CO2e savings (metric tonnes CO2e)**

2,184

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

1,105,072

**Investment required (unit currency – as specified in C0.4)**

463,645

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Mechanical upgrades to higher efficiency motors, implementation of advanced control strategies, and optimization. Retrofitting variable speed drives to pumps.

---

**Initiative category & Initiative type**

Energy efficiency in production processes  
Machine/equipment replacement

**Estimated annual CO2e savings (metric tonnes CO2e)**

16,022

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

3,208,721

**Investment required (unit currency – as specified in C0.4)**

440,516

**Payback period**

<1 year

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Replacement of old equipment with high efficiency systems: chillers, pumps, motors, fans

**Initiative category & Initiative type**

Energy efficiency in production processes  
Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

10,722

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

2,165,771

**Investment required (unit currency – as specified in C0.4)**

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Combination of projects - Mechanical upgrades, optimization of uptime and operational parameters adjustments. Optimization of utilities consumption (power, CDA, heat)

---

**Initiative category & Initiative type**

Energy efficiency in production processes  
Smart control system

**Estimated annual CO2e savings (metric tonnes CO2e)**

1,717

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

341,460

**Investment required (unit currency – as specified in C0.4)**

32,277

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Implementation of smart control through installation of sensors and operational sequence control

**C4.3c**

**(C4.3c) What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Lower return on investment (ROI) specification	Micron defined internal Sustainability ROI and NPV guidelines to prioritize reduction opportunities.
Other	Benchmarking on emission reduction solutions in the industry sector

**C4.5**

**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

**C4.5a**

**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.**

**Level of aggregation**

Group of products

**Description of product/Group of products**

Low power products designed to reduce power requirement to our customers' applications

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product and avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

**% revenue from low carbon product(s) in the reporting year**

64

**Comment**

Products for the mobile market requires optimized power efficient solutions. DDR4, DDR5 and future compute solutions drive for more efficient workload management compared with previous technology. Energy efficiency is a key competitive advantage to our products and will continue to be an integral part of the R&D, design and manufacture of our core products.

## C5. Emissions methodology

### C5.1

**(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).**

#### Scope 1

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

**Base year emissions (metric tons CO<sub>2</sub>e)**

2,945,735

**Comment**

Base year changed from 2016 to 2018 to align with the baseline year of the new emission reduction target reported in C4.

2018 Scope 1 emissions value as reported last year in CDP2019.

#### Scope 2 (location-based)

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

**Base year emissions (metric tons CO<sub>2</sub>e)**

2,672,875

**Comment**

Base year changed from 2016 to 2018 to align with the baseline year of the new emission reduction target reported in C4.

2018 Scope 2 (location-based) emissions value as reported last year in CDP2019

#### Scope 2 (market-based)

---

**Base year start**

January 1, 2016

**Base year end**

December 31, 2016

**Base year emissions (metric tons CO2e)**

3,177,990

**Comment**

Base year changed from 2016 to 2018 to align with the baseline year of the new emission reduction target reported in C4.  
2018 Scope 2 (market-based) emissions value as reported last year in CDP2019.

## C5.2

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

## C6. Emissions data

### C6.1

**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**

**Reporting year**

---

**Gross global Scope 1 emissions (metric tons CO2e)**

3,194,543

**Comment**

Micron Scope 1 emissions include: process GHG gases (PFC, HFC, SF6, NF3, N2O), Heat Transfer Fluid, stationary fuel combustion, mobile fuel combustion (owned vehicles) and refrigerant leaks.

### C6.2

**(C6.2) Describe your organization's approach to reporting Scope 2 emissions.**

**Row 1**

---

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

### Scope 2, market-based

We are reporting a Scope 2, market-based figure

### Comment

We are reporting both location-based and market based figures.

Location-based calculated by using the most recent factors published by relevant agencies for each location/country.

Market-based calculated using Supplier specific emission rates where applicable/available.

Whenever the market-based factor is not available we considered the location-based EF for the calculation of equivalent CO2 emissions.

## C6.3

**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?**

### Reporting year

---

#### Scope 2, location-based

2,855,522

#### Scope 2, market-based (if applicable)

3,502,773

### Comment

Micron Scope 2 emissions include: purchased electricity, purchased steam, purchased cooling.

## C6.4

**(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

Yes

### C6.4a

**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

---

#### Source

Non-manufacturing locations: sales offices and design centers, in multiple countries

#### Relevance of Scope 1 emissions from this source

Emissions are not relevant



**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why this source is excluded**

Sales and design offices in America, Asia and Europe have multiple locations even within the same country.

The most significant GHG source would be electricity consumption that is <1% of total Scope 2 emissions (location-based and market-based)

## C6.5

**(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.**

**Purchased goods and services**

---

**Evaluation status**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

2,102,370

**Emissions calculation methodology**

Micron used Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier & procurement spend data. The spend data was mapped to corresponding industry sectors and then multiplied by cradle-to-gate emission factors for the sector to provide an estimated carbon emissions associated with the extraction, production and transport of purchased goods and services acquired or purchased by Micron in the reported year CY2019. Supplier spend activity that was already included in Scope 1 or 2 (such as electricity purchases) and other Scope 3 categories (such as business travel) that could be further defined to a GHGP Scope 3 category were removed from the Purchased Goods & Services category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability data in the future which will impact our year-on-year reporting and trends over time. For the first time this year, we sent a survey to our key suppliers to collect direct emissions allocation data for raw material and services they provide to Micron

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

3

**Please explain**

Used industry average emission factors by commodity category to calculate total emissions and where available direct data provided by suppliers

## Capital goods

---

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

917,827

### Emissions calculation methodology

Micron used Environmentally Extended Economic Input Output (EEIO) analysis based on its annual supplier & procurement spend data. The spend data was mapped to corresponding industry sectors and then multiplied by cradle-to-gate emission factors for the sector to provide an estimated carbon emissions associated with the extraction, production and transport of purchased goods and services acquired or purchased by Micron in the reported year CY2019. Supplier spend activity that was already included in Scope 1 or 2 (such as electricity purchases) and other Scope 3 categories (such as business travel) that could be further defined to a GHGP Scope 3 category were removed from the Purchased Goods & Services category to prevent double counting. This may represent an under- or over-reporting of emissions in certain supplier categories and specific suppliers based on available spend data due to the nature of cost and accrual accounting. We anticipate improving the methodology and availability data in the future which will impact our year-on-year reporting and trends over time. For the first time this year, we sent a survey to our key suppliers to collect direct emissions allocation data for capital goods they provide to Micron.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

3

### Please explain

Used industry average emission factors by commodity category to calculate total emissions and where available direct data provided by suppliers.

For capital goods, actual data from suppliers show much lower emissions than the ones calculated with default factors and main reason is the significant use of renewable energy at some of our main suppliers and this caused a significant decrease in total emissions in this category.

## Fuel-and-energy-related activities (not included in Scope 1 or 2)

---

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

558,981

### Emissions calculation methodology

This category includes upstream emissions from purchased fuels and electricity, including generation, transmission & distribution (T&D) and any other losses. Emissions due to fuel and energy related activities are calculated using actual fuel and electricity consumption for CY2019 along with UK DEFRA emission factors (revision 2019).

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

0

**Please explain**

Emissions are calculated with published emission factors due to lack of specific emissions data from power/fuel suppliers.

**Upstream transportation and distribution**

---

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

183,191

**Emissions calculation methodology**

Included upstream transportation of: purchased goods, capital goods, transfer of products/materials between Micron sites. Carrier provided emissions reports, SAP reports provided activity data (by carrier, category, and total kg). Then used carrier reports to calculate a "CO2 emissions modifier" (kg / CO2 Emissions). CO2 Modifier then applied to total kg shipping data to generate estimated CO2 emissions calculations. For this reporting year CY2018, emissions from outbound logistics services (reported as downstream transportation/distribution previously) have been included in this upstream category because outbound services are also purchased by Micron (GHG Protocol guideline for Corporate Value Chain, page 44)

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

39

**Please explain**

Estimate was necessary due to lack of specific route/distance data.

**Waste generated in operations**

---

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

19,105

**Emissions calculation methodology**

Calculated CO2 emissions based on tonnage of CY2019 hazardous and non-hazardous waste sent to incineration (with and without energy recovery), recycle, landfill,

composting, chemical treatment. Sources of emission factors: "Waste Sector\_GHG Protocol version 5, 2013" - tab "Thermal Treatment" and DEFRA Waste disposal (2019)

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

0

**Please explain**

Waste Generated in Operations. Calculation was necessary due to lack of specific waste suppliers data

**Business travel**

---

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

17,227

**Emissions calculation methodology**

Emissions from business travel (including flights , hotel, and car rentals) are calculated using actual data that is tracked and reported by Micron's travel agencies based on actual CY2018 business travels data. GHG emissions are then calculated by using EPA emission factors.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Please explain**

Emission calculations provided by travel service provider, including emissions from flights (short, medium, long distance), hotel and rental car. CY19 emissions lower than CY18 thanks to an internal optimization of travel requests.

**Employee commuting**

---

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

974

**Emissions calculation methodology**

For this category, we calculated total GHG emissions from the commuter buses used by our employees in Singapore, Japan, Taiwan and China.

For the first time, we used actual data CY19 (km/year and volume of fuel) provided by bus providers.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Please explain**

Transportation vendors provided distance/fuel consumption data for all relevant locations

**Upstream leased assets**

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

Micron does not have relevant leased asset for the reporting year

**Downstream transportation and distribution**

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

In completing a Scope 3 screening and inventory, we have determined that emissions from outbound logistics services (reported as downstream transportation/distribution previously) have to be included in the "Upstream transportation and distribution" category because outbound services are paid by Micron (GHG Protocol guideline for Corporate Value Chain, page 44). Total emissions from distribution and transportation upstream and downstream are then reported in "Upstream transportation and distribution" .

**Processing of sold products**

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

As per WBCSD/WRI Greenhouse Gas Protocol (GHGP), "If the eventual end use of sold intermediate products may be unknown, companies may disclose and justify the exclusion of downstream emissions from categories 9, 10, 11, and 12 in the report. " In completing a scope 3 screening and inventory, we have determined that our sold products should be classified as 'intermediate products' per the GHGP because Micron does not sell any finished/ final products and it is very difficult to estimate the end-use of our products given the range of application types and products which use memory and storage. Thus, we have determined that categories 9, 10,11 and 12 are not relevant for Micron.

**Use of sold products**

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

As per WBCSD/WRI Greenhouse Gas Protocol (GHGP), "If the eventual end use of sold intermediate products may be unknown, companies may disclose and justify the exclusion of downstream emissions from categories 9, 10, 11, and 12 in the report. " In completing a scope 3 screening and inventory, we have determined that our sold products should be classified as 'intermediate products' per the GHGP because Micron does not sell any finished/ final products and it is very difficult to estimate the end-use of our products given the range of application types and products which use memory and storage. Thus, we have determined that categories 9, 10,11 and 12 are not relevant for Micron.

## **End of life treatment of sold products**

---

### **Evaluation status**

Not relevant, explanation provided

### **Please explain**

As per WBCSD/WRI Greenhouse Gas Protocol (GHGP), "If the eventual end use of sold intermediate products may be unknown, companies may disclose and justify the exclusion of downstream emissions from categories 9, 10, 11, and 12 in the report. " In completing a scope 3 screening and inventory, we have determined that our sold products should be classified as 'intermediate products' per the GHGP because Micron does not sell any finished/ final products and it is very difficult to estimate the end-use of our products given the range of application types and products which use memory and storage. Thus, we have determined that categories 9, 10,11 and 12 are not relevant for Micron.

## **Downstream leased assets**

---

### **Evaluation status**

Not relevant, explanation provided

### **Please explain**

Micron does not lease assets to others - not applicable

## **Franchises**

---

### **Evaluation status**

Not relevant, explanation provided

### **Please explain**

Micron does not have franchises - not applicable

## **Investments**

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### **Evaluation status**

Not relevant, explanation provided

### **Please explain**

Not applicable for the reporting year CY19

### Other (upstream)

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

No additional upstream categories besides what reported above

### Other (downstream)

---

**Evaluation status**

Not relevant, explanation provided

**Please explain**

No additional downstream categories besides what reported above

## C6.7

**(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?**

No

## C6.10

**(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO<sub>2</sub>e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.**

---

**Intensity figure**

0.000292

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

6,050,066

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

20,736,881,874

**Scope 2 figure used**

Location-based

**% change from previous year**

55

**Direction of change**

Increased

**Reason for change**

Unit measure: metric tons CO2e/\$ revenue increased as per a combined increase in combined Scope 1 + Scope 2 and a decreased revenue for calendar year 2019 compared to calendar year 2018.

## C7. Emissions breakdowns

### C7.1

**(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?**

Yes

### C7.1a

**(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).**

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	467,490	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	513	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	313,225	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	176,298	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	1,152,770	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	71,059	IPCC Fourth Assessment Report (AR4 - 100 year)
NF3	379,113	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify Heat Transfer Fluids (HTF)	634,075	IPCC Fourth Assessment Report (AR4 - 100 year)

### C7.2

**(C7.2) Break down your total gross global Scope 1 emissions by country/region.**

Country/Region	Scope 1 emissions (metric tons CO2e)
----------------	--------------------------------------



United States of America	560,248
Singapore	1,130,430
Taiwan, Greater China	405,697
Japan	1,054,666
China	41,844
Malaysia	1,658

## C7.3

**(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.**

By activity

### C7.3c

**(C7.3c) Break down your total gross global Scope 1 emissions by business activity.**

Activity	Scope 1 emissions (metric tons CO <sub>2</sub> e)
Manufacturing process	2,076,740
Combustion	468,764
Refrigeration/Cooling	649,039

## C7.5

**(C7.5) Break down your total gross global Scope 2 emissions by country/region.**

Country/Region	Scope 2, location-based (metric tons CO <sub>2</sub> e)	Scope 2, market-based (metric tons CO <sub>2</sub> e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
United States of America	386,167	508,455	1,240,483	0
Singapore	756,962	756,962	1,899,235	0
Taiwan, Greater China	1,226,453	1,664,474	2,340,687	0
Japan	257,482	344,424	557,320	0
China	192,283	192,283	210,031	0
Malaysia	36,175	36,175	52,126	0

## C7.6

**(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.**

By business division

### C7.6a

**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Wafer fabrication	2,453,571	3,106,164
Assembly and Test	401,951	396,608

## C7.9

**(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?**

Increased

### C7.9a

**(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.**

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	Not change to renewable energy consumption in CY2019
Other emissions reduction activities	37,228	Decreased	0.7	CO2 emissions avoided from energy saving projects implemented during CY19 (reported in 4.3b). %change = [(total CO2 emissions avoided from energy savings projects in CY19)/(CY18 Scope1+2 location-based as reported in CDP2019)]*100
Divestment	155,000	Decreased	2.8	Micron sold a manufacturing site in Singapore. Actual emissions for CY19

				are not available, but considered equal to CY18 emissions because the site is still operating with same loading. in CY19. Avoided emission from divestment % = (site emissions CY18)/(CY18 Scope1+2 location-based as reported in CDP2019)]*100
Acquisitions				No acquisitions in CY19
Mergers				No mergers in CY19
Change in output	394,227	Increased	7.7	Increased production output at existing manufacturing sites in CY2019. Emission Value % = (CY19 emissions from increased output at existing sites)/(Scope 1+Scope 2 location-based CY2018 as reported in CDP2019)*100
Change in methodology				No change in methodology
Change in boundary				No change in boundary
Change in physical operating conditions				No change in physical operating conditions
Unidentified				not applicable
Other				not applicable

## C7.9b

**(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?**

Location-based

## C8. Energy

### C8.1

**(C8.1) What percentage of your total operational spend in the reporting year was on energy?**

More than 0% but less than or equal to 5%

## C8.2

**(C8.2) Select which energy-related activities your organization has undertaken.**

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

## C8.2a

**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	2,265,111	2,265,111
Consumption of purchased or acquired electricity		0	6,105,748	6,105,748
Consumption of purchased or acquired steam		0	81,541	81,541
Consumption of purchased or acquired cooling		0	112,593	112,593
Consumption of self-generated non-fuel renewable energy		45		45

Total energy consumption		45	8,564,993	8,565,038
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## C8.2b

**(C8.2b) Select the applications of your organization’s consumption of fuel.**

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

## C8.2c

**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.**

---

### Fuels (excluding feedstocks)

Diesel

### Heating value

LHV (lower heating value)

### Total fuel MWh consumed by the organization

11,563

### MWh fuel consumed for self-generation of electricity

958

### MWh fuel consumed for self-generation of heat

1,098

### MWh fuel consumed for self-generation of steam

226

### MWh fuel consumed for self-cogeneration or self-trigeneration

9,282

**Emission factor**

74,349

**Unit**

metric tons CO<sub>2</sub>e per GJ

**Emissions factor source**

IPCC 2006, Volume 2, Table 2.3 - Default Emission Factor for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for the relevant fuel. Emission factor in CO<sub>2</sub> equivalent has been calculated as a sum of default emission factors: CO<sub>2</sub> emission factor + CH<sub>4</sub> emission factor (default value) + N<sub>2</sub>O emission factor (default value)

**Comment**

Unit measure translated from the original unit measure in the Table 2.3 that is "Kg per TJ"

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

2,249,968

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

760,076

**MWh fuel consumed for self-generation of steam**

374,590

**MWh fuel consumed for self-cogeneration or self-trigeneration**

1,115,303

**Emission factor**

56,256

**Unit**

metric tons CO<sub>2</sub>e per GJ

**Emissions factor source**

IPCC 2006, Volume 2, Table 2.3 - Default Emission Factor for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for the relevant fuel. Emission factor in CO<sub>2</sub> equivalent has been calculated as a sum of default emission factors: CO<sub>2</sub> emission factor + CH<sub>4</sub> emission factor (default value) + N<sub>2</sub>O emission factor (default value)

**Comment**

Unit measure translated from the original unit measure in the Table 2.3 that is "Kg per TJ"

---

**Fuels (excluding feedstocks)**

Propane Liquid

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

3,580

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

3,580

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Emission factor**

63,152

**Unit**

metric tons CO<sub>2</sub>e per GJ

**Emissions factor source**

IPCC 2006, Volume 2, Table 2.3 - Default Emission Factor for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for the relevant fuel. Emission factor in CO<sub>2</sub> equivalent has been calculated as a sum of default emission factors: CO<sub>2</sub> emission factor + CH<sub>4</sub> emission factor (default value) + N<sub>2</sub>O emission factor (default value)

**Comment**

Unit measure translated from the original unit measure in the Table 2.3 that is "Kg per TJ"

## C8.2d

**(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	533,031		45	45
Heat	0	0	0	0
Steam	345,580	345,580	0	0
Cooling	597,873	597,873	0	0

## C8.2e

**(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.**

### Sourcing method

None (no purchases of low-carbon electricity, heat, steam or cooling)

### Low-carbon technology type

### Country/region of consumption of low-carbon electricity, heat, steam or cooling

### MWh consumed accounted for at a zero emission factor

### Comment

Micron generated electricity from a Micron-owned solar panel installation in Singapore (total CY19 reported in 8.2a) and electricity generated was consumed by Micron for admin building lighting (otherwise using grid power), then positively impacting Micron Scope 2 emissions. We did not purchase from another company any energy at low-carbon emission factor included in Scope 2 figure during the reporting year.

## C9. Additional metrics

### C9.1

**(C9.1) Provide any additional climate-related metrics relevant to your business.**



## C10. Verification

### C10.1

**(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	No third-party verification or assurance

### C10.1a

**(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.**

#### Verification or assurance cycle in place

Annual process

#### Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

#### Type of verification or assurance


Third party verification/assurance underway

#### Attach the statement

 MTB\_ISO 14064-3-2006 GHGEV 1605 Cert (2019-08-20).pdf

 Fab16\_ISO 14064-3-2006 GHGEV 1604 Cert (2019-08-20)\_to.pdf

 Fab11\_Plant2\_606454\_TW19-00289\_01-EN.PDF

 Fab11\_Plant1\_606454\_TW19-00288\_01\_EN.PDF

#### Page/ section reference

Attached 4 documents, related to 3 different manufacturing locations in Taiwan. All pages of attached documents are relevant to verify GHG emissions in scope and standard used by third party. Attached certificates for CY18 data verification (CY19 verification not available yet)

#### Relevant standard

ISO14064-3

#### Proportion of reported emissions verified (%)

13

## C10.1b

**(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.**

---

### Scope 2 approach

Scope 2 location-based

### Verification or assurance cycle in place

Annual process

### Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

### Type of verification or assurance

Third party verification/assurance underway

### Attach the statement

 MTB\_ISO 14064-3-2006 GHGEV 1605 Cert (2019-08-20).pdf

 Fab16\_ISO 14064-3-2006 GHGEV 1604 Cert (2019-08-20)\_to.pdf

 Fab11\_Plant2\_606454\_TW19-00289\_01-EN.PDF

 Fab11\_Plant1\_606454\_TW19-00288\_01\_EN.PDF

### Page/ section reference

Attached 4 documents, related to 3 different manufacturing locations in Taiwan. All pages of attached documents are relevant to verify GHG emissions in scope and standard used by third party. Attached certificates for CY18 data verification (CY19 verification not available yet)

### Relevant standard

ISO14064-3

### Proportion of reported emissions verified (%)

43

## C10.2

**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

No, we do not verify any other climate-related information reported in our CDP disclosure

## C11. Carbon pricing

### C11.1

**(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?**

Yes

### C11.1a

**(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.**

Singapore carbon tax

### C11.1c

**(C11.1c) Complete the following table for each of the tax systems you are regulated by.**

#### Singapore carbon tax

---

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**% of total Scope 1 emissions covered by tax**

80

**Total cost of tax paid**

3,000,000

**Comment**

Singapore Carbon Tax applies to Micron manufacturing sites and first year of application was calendar year 2019. Sites reported emissions by June 2020, and 80% of reported Singapore scope 1 emissions are covered by tax. Tax amount will be confirmed by the National Environmental Agency after the review and approval of the emission report. Total cost of tax applicable to CY2019 CO2 emissions will be paid by September 2020 (first time) in Singapore dollars. Amount reported above in USD estimated based on average exchange rate in 2020.

### C11.1d

**(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?**

Micron worked on the payment of carbon tax for CY2019. It was earlier mapped out with a monitoring framework which was presented to the leadership team. There will be further discussions on how to improve performance in future to make this more robust and accurate. Affected Micron sites started an assessment since the proposed rule was issued and evaluated cost impact and possible reduction solutions.

There is a dedicated multi-disciplinary team working on identifying opportunities to reduce emissions (and thus GHG emissions taxes) and establish the execution plan by prioritizing actions that have the most significant impact. Micron will be working on optimizing the use of process gases and install dedicated abatement.

Based on current emissions baseline and future projections, we have planned to invest over \$30 millions to install additional abatement units in our manufacturing sites in Singapore and this investment will help with reducing process emissions covered by the carbon tax.

## C11.2

**(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?**

No

## C11.3

**(C11.3) Does your organization use an internal price on carbon?**

No, and we do not currently anticipate doing so in the next two years

## C12. Engagement

### C12.1

**(C12.1) Do you engage with your value chain on climate-related issues?**

Yes, our suppliers

Yes, our customers

### C12.1a

**(C12.1a) Provide details of your climate-related supplier engagement strategy.**

---

**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Collect climate change and carbon information at least annually from suppliers

**% of suppliers by number**

1

**% total procurement spend (direct and indirect)**

43.9

**% of supplier-related Scope 3 emissions as reported in C6.5**

3

**Rationale for the coverage of your engagement**

Micron began piloting information collection from suppliers in early 2020. We chose large, strategic suppliers including capital equipment and key commodity suppliers that have previously reported to CDP. The engagement activity involved developing a simplified data collection questionnaire covering scope 1&2 emissions, emissions intensity, energy use, emissions management activities, and climate-related risks and opportunities. The questionnaire was emailed to suppliers with request to complete it by end of May 2020, followed by several reminder e-mails. Micron's procurement category teams were notified of completion.

**Impact of engagement, including measures of success**

Measures of success include total number and percent of suppliers engaged, response rate, and number that improve their performance because of Micron's engagement. Total number of suppliers engaged to date is 47, with a response rate of 40%. This engagement started in early 2020, so there is no measurement of number of suppliers improving their performance on these success criteria yet.

**Comment**

---

**Type of engagement**

Compliance & onboarding

**Details of engagement**

Included climate change in supplier selection / management mechanism

Code of conduct featuring climate change KPIs

Climate change is integrated into supplier evaluation processes

Other, please specify

Environmental programs and goals

**% of suppliers by number**

75

**% total procurement spend (direct and indirect)**

60

**% of supplier-related Scope 3 emissions as reported in C6.5**

82

**Rationale for the coverage of your engagement**

Micron includes a significant majority of its suppliers in this effort as part of our standard supplier management processes. Micron uses a segmentation model to determine supplier priority and annual supplier management planning effort. Segmentation utilizes market constraints, spend, type of supplier, location and supply risk to calculate the segmentation status. Micron submits a sourcing compliance expectation assessment to high risk/strategic/developing suppliers, which includes review of the suppliers programs focused on greenhouse gas emission. For those suppliers identified as High Risk from the Sourcing Compliance assessment, they will receive a supplier audit including identification of improvement opportunities and corrective action plans. Scope 3 % includes emissions reported in 6.5 for the categories: purchased goods/services, Capital goods, upstream transportation/distribution.

Since December 2019, Micron requires 100% of all new suppliers to accept Supplier Responsibility Expectations, which includes a commitment to reducing GHG emissions and associated risks by disclosing targets and/or plan for improvement.

### **Impact of engagement, including measures of success**

Micron Purchase Order Terms and Conditions reference Micron's Supplier Requirement Standard (SRS, formerly our Supplier Quality Requirements Document), which contains the expectation that all suppliers demonstrate commitment and conformance to the requirements outlined under the Supplier Responsibility section of the Micron Supplier Expectations website. New Suppliers that directly support Manufacturing are required to go through a new supplier qualification process before being added to Micron's approved vendors. The Supplier is requested to respond to Micron's Sourcing Compliance Assessment, which includes a review of the suppliers programs focused on greenhouse gas emissions. Any new supplier added to Micron's approved vendors receives Micron's Supplier Responsibility document, which indicates they are expected to provide evidence of their compliance toward CDP. Micron also includes Risk and Compliance, which includes Supplier Responsibilities and Expectations, as a scoring element on Supplier Business Reviews and Scorecards. The score provides visibility to those areas that need improvement and development. Included in the score is Micron's Supplier Responsibility and Expectation on line training course credit, which is required to be taken by the supplier. A key measure of success is the number of suppliers found in noncompliance with the SQRD climate-related expectations. No suppliers were found in noncompliance of those expectations.

### **Comment**

Micron implemented software system to facilitate and manage supplier responses and data. This will continue to improve the coverage, analysis and processes that have been put into place. Also, Micron continues to be a member of RBA, pushes Micron Code of Conduct and Supplier Expectations to its supply base

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### **Type of engagement**

Innovation & collaboration (changing markets)

### **Details of engagement**

Run a campaign to encourage innovation to reduce climate impacts on products and services

**% of suppliers by number**

1

**% total procurement spend (direct and indirect)**

31.3

**% of supplier-related Scope 3 emissions as reported in C6.5**

3

**Rationale for the coverage of your engagement**

This engagement covers our largest suppliers of capital equipment, whose products play a key role in Micron's greenhouse gas emissions and energy use. Suppliers were notified in mid-2020 during annual supplier evaluations that they will be scored on their products' support of Micron's aspirational environmental goals, including greenhouse gas emissions and energy efficiency goals. This score is a component of the sustainability portion of supplier scorecards provided regularly to suppliers.

**Impact of engagement, including measures of success**

Measures of success include total number and percent of equipment suppliers engaged, and calculated reductions in greenhouse gas emissions and energy use based on these engagements. This engagement started in mid-2020, so there is no measurable impact on these success criteria yet.

**Comment**

## C12.1b

**(C12.1b) Give details of your climate-related engagement strategy with your customers.**

---

**Type of engagement**

Collaboration & innovation

**Details of engagement**

Run a campaign to encourage innovation to reduce climate change impacts

**% of customers by number**

90

**% of customer - related Scope 3 emissions as reported in C6.5**

3

**Please explain the rationale for selecting this group of customers and scope of engagement**

We work closely with our business to business customers to design, manufacture, sell, and transport the most energy-efficient products possible, and are constantly innovating to improve product energy use in order to meet customer needs and ensure continued competitiveness of Micron products. This includes engaging with customers in our design labs; continuously improving the efficiency of our packaging, transportation, and logistics; and understanding and acting on evolving customer expectations and needs regarding product energy efficiency; as well as providing information about our efficient products noted under "Education/information sharing." Scope 3 % includes emissions from the category "Upstream transportation/distribution" that we impact by interacting with our customers to reduce returns by selecting the appropriate package.

### **Impact of engagement, including measures of success**

Measures of success including percentage of low-power products in Micron's sales mix (64%), and Energy efficiency improvement in our products. Energy efficiency improvement is a key product specification for the vast majority of Micron customers. Micron products typically improve energy efficiency by 10% from one generation to the next, and our LPDDR5 improved efficiency 20% from the previous generation, as noted in our most recent sustainability report

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### **Type of engagement**

Education/information sharing

### **Details of engagement**

Run an engagement campaign to education customers about your climate change performance and strategy

### **% of customers by number**

90

### **% of customer - related Scope 3 emissions as reported in C6.5**

0

### **Please explain the rationale for selecting this group of customers and scope of engagement**

We routinely meet with our customers to understand how we are performing from their perspective. Cross-functional teams review the outcomes of those conversations, as well as written customer requirement documents, and assess opportunities for improvement. A monthly meeting of executives and senior leaders drives accountability for the improvements we undertake in response to key customer expectations and requirements. We are also developing tools to dive deeper into our customer and investor expectations to improve stakeholder engagement. Additionally, we engage in several industry organizations alongside our customers, building industry consensus across a range of social and environmental issues specific to our industry – such as conflict minerals, supply chain labor standards and climate-related matters. Scope 3 % is zero - emissions from the use of our products in the final applications is not relevant (refer to 6.5 for explanation)



### **Impact of engagement, including measures of success**

Measures of success include percentage of customers engaged (90%, as noted above), and percentage of low-power products in Micron's sales mix (64%). We recognize that the energy demand of our products contributes to the global environmental impact of technology. This is why we partner with our customers to deliver memory solutions that meet tightening requirements and expectations for energy efficiency. Our System Power Calculator is an online tool available to our customers to help them estimate memory power requirements when making important system and architecture and design decisions. This information helps our customers make choices that can influence the overall energy footprint of the end devices our products enable.

## **C12.3**

**(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?**

Trade associations

## **C12.3b**

**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

## **C12.3c**

**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.**

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### **Trade association**

SIA - Semiconductor Industry Association at all relevant regions (US, Europe, Asia)

**Is your position on climate change consistent with theirs?**

Consistent

### **Please explain the trade association's position**

The Semiconductor Industry Association (SIA) represents the semiconductor industry. Although the industry contributes only a very small amount of GHG emissions, SIA and its members have been engaged in ongoing efforts to reduce these emissions. SIA and its members have participated in the efforts of the World Semiconductor Council (WSC) to voluntarily reduce emissions of PFCs. The global industry committed to a 10 percent reduction from a baseline year, and in 2011 the industry announced that the actual reduction was 32 percent in absolute emissions. The post 2010 goal is to reduce 30% of the unit emission by 2020.

**How have you influenced, or are you attempting to influence their position?**

Micron participates to periodic meetings with all members and supports the action by providing required data and information for the impact assessment. Furthermore, Micron has been sharing annual greenhouse gas inventory with the association.

## C12.3f

**(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

Micron has established an Environmental Policy Committee to review upcoming potential environmental issues and obligations (regulatory and from interested parties) and evaluate the company response within the relevant regional industry association to align with the company strategy.

This committee includes senior members of the key functions: the VP Compliance Employment Sustainability & Trade, Legal Department, Government Affairs, Global EHS, Supply Chain and Product Compliance.

Members have periodic meetings to review upcoming issues, assess the potential impact and define strategy to prevent and reduce any associated risks.

## C12.4

**(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

 Micron 2019 10-Kv2.pdf

**Page/Section reference**

Micron 2019 10-K: page numbers 7 (10 of the PDF), 18 (21 of the PDF)

**Content elements**

Risks & opportunities

**Comment**

Our annual 10-K notes climate change as a risk to the company.

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**Publication**

In voluntary sustainability report

**Status**

Complete

**Attach the document**

 Micron 2020 Sustainability Report.pdf

**Page/Section reference**

Page numbers 5, 15, 16, 18, 29-30, 32, 40-41, 54-55, 85

**Content elements**

- Governance
- Strategy
- Risks & opportunities
- Emissions figures
- Emission targets

**Comment**

Our sustainability report covers Micron's climate change-related governance, strategy, risks and opportunities, and emissions figures and targets.

## C15. Signoff

### C-FI

**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

### C15.1

**(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	<b>Job title</b>	<b>Corresponding job category</b>
Row 1	Vice President, Compliance, Employment, Sustainability and Trade	Chief Sustainability Officer (CSO)