C0. Introduction

C0.1

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

Headquartered in Singapore, Musim Mas Group is a fully integrated palm oil corporation that delivers the highest quality and innovative palm oil products and derivatives used across multiple industries worldwide.

As one of the most prominent players in the palm oil industry, we aspire to be a responsible leader in the evolution of the industry, driving a new era of sustainability with innovation across the globe. To that aim, our dedicated, global team of professionals across the entire palm oil supply chain work closely with local and international stakeholders, ensuring that our products are economically viable, socially responsible, and environmentally appropriate.

Since 1972, Musim Mas has established deep and long-standing relationships with our customers and stakeholders worldwide. Our multi-cultural and multi-disciplinary workforce, located in 13 countries, brings innovation to meet the growing needs of our customers.

We are proud to be the preferred supply chain partner for palm oil and its derivatives. From our plantations, mills, refineries, kernel crushing plants, oleochemicals, and specialty fats plants, we manufacture palm oil and value-added derivatives before exporting these to customers via our extensive fleet of tankers and barges. Today, Musim Mas is Indonesia's largest palm oil exporter to customers located all around the world.

The steady growth of Musim Mas is underpinned by the quality of our management and supported by professionals dedicated to the highest standards of quality, safety, and efficiency. Our global marketing activities are undertaken by Inter-Continental Oils and Fats (ICOF), a member of Musim Mas Group.

Despite these achievements our business continues to face new challenges. As we have progressed, so have expectations from stakeholders for a responsible supply base. To achieve this, environmental stewardship has been a core pillar of our sustainability measures. Musim Mas strives to minimise and mitigate adverse impacts on the environment, by regularly assessing the impact of our operations through tools or exercises such as RSPO PalmGHG and CDP. We initiated our first Life Cycle Assessment (LCA) in 2019, to evaluate the impact of our operations on the environment, as well as develop holistic mitigation plans to minimize those impacts.

Musim Mas takes the impact of climate change seriously and is strongly committed to minimising GHG emissions within our operations. Our sustainability teams, senior management and the Board, are involved in decision-making pertaining to our climate-related risks and opportunities to ensure emission reductions are adequately managed throughout our operations.

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	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2021	December 31 2021	No	<Not Applicable>

C0.3

(C0.3) Select the countries/areas in which you operate.

Brazil
China
Germany
India
Indonesia
Italy
Malaysia
Netherlands
Singapore
Spain
United Kingdom of Great Britain and Northern Ireland
United States of America
Viet Nam

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

C-AC0.6/C-FB0.6/C-PF0.6

(C-AC0.6/C-FB0.6/C-PF0.6) Are emissions from agricultural/forestry, processing/manufacturing, distribution activities or emissions from the consumption of your products – whether in your direct operations or in other parts of your value chain – relevant to your current CDP climate change disclosure?

	Relevance
Agriculture/Forestry	Both own land and elsewhere in the value chain [Agriculture/Forestry only]
Processing/Manufacturing	Direct operations only [Processing/manufacturing/Distribution only]
Distribution	Direct operations only [Processing/manufacturing/Distribution only]
Consumption	No

C-AC0.6g/C-FB0.6g/C-PF0.6g

(C-AC0.6g/C-FB0.6g/C-PF0.6g) Why are emissions from the consumption of your products not relevant to your current CDP climate change disclosure?

Row 1

Primary reason

Analysis in progress

Please explain

Musim Mas Group is a fully integrated palm oil corporation that delivers innovative palm oil products and derivatives across multiple industries worldwide. These industries subsequently produce many possible applications of oil palm derivatives, thus, we strive to trace the final use, waste disposal, and end-of-life treatment. As such, we cannot control the processing methodology, final use, waste disposal, and end-of-life treatment of the products. Nevertheless, we are currently trying to develop methodology to integrate the consumption emission containing Musim Mas products into our scope and we will disclose accordingly when ready.

C-AC0.7/C-FB0.7/C-PF0.7

(C-AC0.7/C-FB0.7/C-PF0.7) Which agricultural commodity(ies) that your organization produces and/or sources are the most significant to your business by revenue? Select up to five.

Agricultural commodity
Palm Oil

% of revenue dependent on this agricultural commodity
More than 80%

Produced or sourced
Both

Please explain
Musim Mas business activities cover the whole palm oil supply chain including:
o Managing Oil Palm plantations to produce Fresh Fruit Bunches
o Milling oil palm fruits to produce crude palm oil (CPO) and Palm Kernel (PK)
o Crushing PK to obtain crude palm kernel oil (PKO)
o Refining CPO and PKO
o Further processing to produce value-added products such as specialty fats, oleochemicals, biodiesel, soap, palm wax and functional products such as emulsifiers
o Manufacturing consumer goods such as cooking oil and personal care products
o Shipping and merchandising value-added products to global destinations

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier

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
Director on board	The Musim Mas Board of Directors ('Board') considers sustainability a core component of our corporate integrity, ensuring that material environmental, social and governance (ESG) factors are embedded into business strategies and decisions. The Board, senior management, and relevant sustainability teams meet quarterly to assess and review key ESG issues including overseeing and monitoring climate-related risks and opportunities such as GHG emissions, biodiversity, deforestation, etc. In 2021, the Board approved the construction of a methane capture in our new mill as our concrete action to reduce GHG emissions. Other decisions include joining Palm Oil Innovation Group (POIG) to become the first South-East Asia company to join, involvement in landscape initiatives such as Siak-Pelalawan Landscape Program, etc.

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	Scope of board-level oversight	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	Sustainability objectives in climate change, NDPE commitments, and reduction of GHG emissions continue to become the major factors in our operational actions, decision-making, and business strategy. To achieve our sustainability goals, these issues are periodically discussed through a Quarterly Meeting. The quarterly meeting serves as a discussion platform among the Board, Directors, and Head of Departments to discuss the progression of all ongoing projects and matters, including climate change, deforestation, and GHG emission reduction issues. The Director of Sustainability together with the relevant Sustainability Team will brief the board on all of the sustainability issues covering the environment as well as social aspects, including climate-related issues and GHG emissions reduction. The outcome of this discussion includes plans of action, risk management policies, annual budgets, business plans and so on. Consequently, the results of discussions and action plans will be shared and communicated throughout all relevant departments, ensuring the messages are conveyed to all layers of workers. In alignment with the GRI reporting standard, we publicly communicate our annual sustainability progress through Sustainability Report (https://www.musimmas.com/sustainability-report/).

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues	Primary reason for no board-level competence on climate-related issues	Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future
Row 1	Yes	Musim Mas is fully committed to implementing sustainability practices at the highest level across our operations. Our board member is extensively involved with the latest climate-related issues and standards. As such, he co-chaired the Standing Committee for Standards and has been actively involved in the RSPO over the years, co-chaired the Biodiversity and HCV working group, the Compensation task force, and previously represented Growers from the Pacific at the Board. Moreover, he is a member of the High Carbon Stock Approach Executive Committee. Accordingly, sustainability achievements such as full and beyond compliance with various international certification schemes including RSPO, ISCC, POIG, ISPO, and ITSNC principles and guidelines are continuously maintained and recently ranked 3rd out of 100 global palm oil companies in SPOTT 2021.	<Not Applicable>	<Not Applicable>

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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify (Director of Sustainability)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

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).

In the sustainability governance structure, the Director of Sustainability is also part of the Board of Directors. The Director of Sustainability oversees the implementation and execution of our Sustainability Policy commitments, and an external senior strategic advisor supports the work. The Director of Sustainability pioneered and built up the sustainability division, taking the team from strength to strength over the years. The Sustainability committee carries out the day-to-day implementation of our commitments and comprises more than 150 members across Indonesia and Singapore. We continue to invest in dedicated teams on the ground to implement training programs and smallholders' outreach.

Following our Sustainability Policy, Musim Mas adopts various recognised third-party sustainability certification schemes into our operations demonstrating our commitment to the highest sustainability standards across our supply chain. These include but are not limited to Roundtable Sustainable Palm Oil (RSPO), International Sustainability & Carbon Certification (ISCC), Palm Oil Innovation Group (POIG), Indonesian Sustainable Palm Oil (ISPO), and Italian National Sustainability Certification System (ITSNC / INS). These schemes focus on climate-related issues and sustainable practices across the supply chain. The Sustainability Committee has the responsibility to monitor the development concerning sustainability and climate-related issues, assess any climate-related risks and opportunities, as well as implement and manage sustainability and climate programs while maintaining compliance to all the certification and verification schemes as well as our Sustainability Policy at all stages of the supply chain.

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	Climate-related issues have been one of the biggest factors that led Musim Mas toward many climate-related risk assessments and sustainable certification and verification. As such, Musim Mas implements the sustainability practices and NDPE policy (No Deforestation and peat Exploitation) across the supply chain. To track the progress of our sustainability practices, both annual achievements and targets are updated and publicly communicated to stakeholders through our annual Sustainability Report. In achieving the targets, both action plans and projects will be discussed quarterly along with the Board.

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
Director on board	Monetary reward	Emissions reduction target Company performance against a climate-related sustainability index Other (please specify) (Compliance and Certifications)	Our Director on board oversees and resolves any sustainability matter including climate-related issues such as biodiversity, emissions, waste management, and conservation. Additionally, Director on board develops climate-related management programs and action plans related to conservation initiatives at the group level. Our Director on Board works and is evaluated annually based on the Key Performance Indicator (KPI) where compensation and benefits are awarded accordingly. Examples of performance indicators include but are not limited to progress towards GHG emissions reduction target, full compliance with the sustainability standards and certifications such as RSPO, ISCC, and POIG as well as HCV and HCS guidelines. Others include awards and recognitions related to sustainability such as the SPOTT ranking, CDP scorecard, and Ecovadis scorecard. Among many, these indicators were selected as they are aligned with the company's vision and they allow Musim Mas to objectively quantify the progress of the company in the field of sustainability including climate change. Musim Mas uses progress toward its sustainability targets as the threshold of success such as the 55% reduction target in GHG intensity against our 2006 baseline by 2025. Therefore, incentives are provided if progress is either linear to the overall target or exceeds a linear trend.
Director on board	Non-monetary reward	Emissions reduction target Company performance against a climate-related sustainability index Other (please specify) (Compliance and Certifications)	Our Director on board oversees and resolves any sustainability matter including climate-related issues such as biodiversity, emissions, waste management, and conservation. Additionally, Director on board develops climate-related management programs and action plans related to conservation initiatives at the group level. Our Director on Board works and is evaluated annually based on the Key Performance Indicator (KPI) where compensation and benefits are awarded accordingly. Examples of performance indicators include but are not limited to progress towards GHG emissions reduction target, full compliance with the sustainability standards and certifications such as RSPO, ISCC, and POIG as well as HCV and HCS guidelines. Others include awards and recognitions related to sustainability such as the SPOTT ranking, CDP scorecard, and Ecovadis scorecard. Among many, these indicators were selected as they are aligned with the company's vision and they allow Musim Mas to objectively quantify the progress of the company in the field of sustainability including climate change. In complement to the monetary reward, non-monetary reward such as special assignment is also given to those who perform. They are given the authority to form, develop, and budget projects/teams/action plans to improve the key performance indicators. Musim Mas uses progress toward its sustainability targets as the threshold of success, therefore incentives are provided if progress is either linear to the overall target or exceeds a linear trend. Musim Mas uses progress toward its sustainability targets as the threshold of success such as the 55% reduction target in GHG intensity against our 2006 baseline by 2025. Therefore, incentives are provided if progress is either linear to the overall target or exceeds a linear trend.

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	3	Targets, strategies, and action plans can be found in our annual Sustainability Report. https://www.musimmas.com/sustainability-report/
Medium-term	3	10	Targets, strategies, and action plans can be found in our annual Sustainability Report. https://www.musimmas.com/sustainability-report/
Long-term	10	30	Targets, strategies, and action plans can be found in our annual Sustainability Report. https://www.musimmas.com/sustainability-report/

C2.1b

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

Musim Mas defines substantive financial impact as impacts that significantly affect and disrupt our supply chains which in turn affect the financial performance of the company. Its definition is further detailed as follows:

- Any impact that could potentially inflict financial loss around 10 percent or higher of current EBITDA estimates.

- Any climatic event that will drastically affect the yield and productivity of oil palm crop as well as palm oil supply.

- Any drastic drop in supply (of raw materials) of 20 percent or more, which affects our production cost as well as production volume.

Recognising the climate-related risks, Musim Mas implements a robust corporate governance and risk management framework to continuously monitor, identify, and manage the arising risks. This framework is managed and aligned with our NDPE and sustainability policies which include no deforestation, no peatland development regardless of its depth, GHG emission reduction, waste management, traceability to plantations, etc.

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
Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment
More than once a year

Time horizon(s) covered
Short-term
Medium-term
Long-term

Description of process
Since 2014, Musim Mas' sustainability policy serves as the framework for our NDPE, traceability, climate change, and other sustainability commitments. Our Sustainability Policy covers our entire global operations, including that of our third-party suppliers. Among many, climate change is a prominent issue in sustainability practices, thus, the climate-related topic is integrated into our multi-disciplinary company-wide risk management process. Herewith are the approaches that Musim Mas takes to identify and mitigate the risks in our operations:

•To keep abreast of new sustainability developments in the oil palm industry as well as progress towards our sustainability goals, the Sustainability committee gathers and analyses relevant updates, information, grievances, and news from both external and internal sources concerning issues such as, but are not limited to climate-related issues, environmental, social, emission reduction, and overall sustainability issues. For example, monthly reports on deforestation and hotspots using various methods and tools including but not limited to satellite, ground patrol, Global Forest Watch (GFW), and Radar for Detecting Deforestation (RADD). Others include the progression of the 17th methane capture plant as part of our commitment to mitigate our GHG emissions. This information will then be shared and discussed with relevant departments to decide on necessary action plans and projects. Next, these initiatives will be reported to the board level before embarking on the plan. For more information, please refer to https://www.musimmas.com/sustainability/.

• Recognising the risk of fire, as a member of the Fire Free Alliance, we launched our Fire Free Village Programme (FFVP) to engage and educate local communities including smallholders in protecting forests from fire. As of December 2021, our FFVP covered 74 villages spanning 450,769 hectares and has conducted 161 trainings in the communities. In 2021, 42 villages were awarded for being fire-free. For more information please refer to https://www.musimmas.com/sustainability/fire-management-and-prevention/.

• We also conduct an extensive review of suppliers' land legalities and status, planting history, and other supporting materials to determine whether the FFB are sourced from conflict-free land. In terms of traceability, we have achieved 100% traceability to mill since 2015 and 94% traceability to plantation as of December 2021. We are on track to achieve 100% full traceability to plantation by December 2025. To ensure continual adherence to the policy, we also actively re-socialize and organize workshops and training to encourage suppliers to apply the same policies to themselves. Moreover, we share knowledge of good agricultural practices with our smallholders, including responsible usage of chemical inputs, such as fertilizers and pesticides to minimize any excess runoff of nutrients to water bodies which could potentially result in eutrophication and acidification. These chemical inputs are frequently monitored to ensure optimal usage has been achieved. Application of good agricultural practices will not only beneficial to the environment but also to the smallholders as lower chemical input will lead to reduced direct operational cost. Other practices include land clearing methods without using fire. For more information, our sustainability policy can be found at http://www.musimmas.com/sustainability/sustainability-policy.

• In case of complaints concerning breaches to our NDPE Policy, Grievance Channels and Controlled Purchase Protocol (CPP) are available to resolve issues, secure remedy and remediation, and exclude errant suppliers as the last resort. If there is an allegation of NDPE violation across our supply chain, we will extensively study the allegation through internal tools as well as publicly available tools such as satellite monitoring, GRASS, GFW, etc. If a breach of the NDPE policy is confirmed, we will engage with the relevant suppliers in question. Moreover, Musim Mas also collaborates with the Earthqualizer platform to monitor deforestation in all of our suppliers and own concessions with bi-weekly reports available. In 2021, no suppliers have been excluded from our operations.

For any grievance, we expect our suppliers to adhere to the three fundamental principles outlined below.

(1)Supplier engagement: continuous monitoring of suppliers is essential for ensuring overall group-level progress towards our NDPE policy compliance and that violations are not taking place within our supply chains. Musim Mas uses various methods including deforestation monitoring platforms, supplier roadmaps for monitoring progress with our priority suppliers, and data collected through self-assessment tools. For example, Musim Mas collaborates with Earthqualizer to monitor deforestation with bi-weekly reports available.
(2)Grievance management: our grievance procedure outlines our process for receiving, logging and verifying all grievances raised against us or our suppliers. Once a grievance is verified as factual, the supplier will undergo our CPP process while the grievance is being addressed. For a specific critical grievance such as new deforestation and peat development, the supplier is directly engaged and subject to a cessation of business until they meet defined milestones. Other non-critical grievances will undergo the CPP procedure.
(3)CPP: grievance resolution milestones are agreed upon and closely monitored. Suppliers will exit the CPP once all conditions and actions are met.

• To ensure top-down NDPE compliance, suppliers are to complete Musim Mas Self-Assessment Tool (SAT) which is an exhaustive set of questions against our NDPE requirements. This evaluation enables suppliers to self-declare information about their operations which allows Musim Mas to identify potential risk areas at the mill level. As of December 2021, 77% of our suppliers have completed their assessments.
• Sustainability committee is dedicated to ensuring continuous adherence to regulations and certification schemes such as RSPO, ISCC, ISPO, and POIG principles and guidelines where annual audits are conducted. As of 2021, all 15 of our integrated mills have been RSPO certified with 34 of our downstream operations have been certified against the RSPO Supply Chain Certification Standard (SCCS).
•To ensure transparency to our customers, we also communicate our sustainability commitments, progress, milestones, and targets in our annual Sustainability report following the GRI reporting standard. Moreover, Musim Mas participates in several well-known public assessments and benchmarking programs including SPOTT, Ecovadis, etc. In SPOTT 2021, we ranked 3rd out of 100 palm oil companies globally, rising from 6th in the previous year. We also conduct third-party verification to ensure the credibility of our reporting. For more details, please refer to https://www.musimmas.com/sustainability-report/.

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	Musim Mas including all of the suppliers must comply with the current applicable local and national laws and regulations, especially those which are related but are not limited to habitat and ecosystem, local communities, and health and safety. For example, Peraturan Menteri Pertanian Republik Indonesia Nomor 11/Permentan/OT.140/3/2015 (updated Perpres 44/2020) or namely Indonesian Sustainable Palm Oil (ISPO) is relevant for us, thus, it is used as part of Musim Mas' operational decision making. Since ISPO's sustainability standard is mandatory for palm oil operations in Indonesia, it is included in our risk assessment.
Emerging regulation	Relevant, always included	With the growing international agreements concerning climate change and GHG emission reduction commitment, the implementation of stricter International and/or national regulations become inevitable. For example, the recent adoption of the ISCC regulation of RED II demands us to further reduce our GHG emissions. Therefore, to ensure continual adherence to the latest regulations, dedicated teams are established to constantly monitor and keep abreast of any new laws and regulations that could affect the business. Moreover, through our internal assessment, we also simulate and project our annual GHG emission values to track and prepare us in case of new savings requirements or guidelines are to be applied.
Technology	Relevant, always included	Knowing the need to address the growing global demand, Musim Mas invests in technologies to continuously increase productivity and maximize yield while simultaneously minimizing its environmental impact. For example, in the effort to achieve our 55% reduction in emissions intensity against the 2006 baseline by 2025, we invest in technology such as methane capture plants in our operating POMs. To date, we have 16 methane capture with a total of 575,075.25 MT CO2e of emissions avoided in 2021. Align with one of the key pillars in our sustainability policy of driving innovation in sustainable practices, the technology-related risk is included in our risk assessment.
Legal	Relevant, always included	Legal is relevant to our operations and included in our risk assessment. Failure to comply with our legal obligations in relation to climate change is a key risk to our business. For example, failure to comply with the applicable legal in the country or area where we are operating could lead to sanction which affected our business. Musim Mas is actively participating in the Indonesian PROPER and aim for the highest reward. Our current PROPER status and reward is available in our Sustainability Report https://www.musimmas.com/wp-content/uploads/2022/05/Musim-Mas-Sustainability-Report-2020.pdf.
Market	Relevant, always included	Emerging regulations concerning sustainability including climate change have influenced the palm oil market. For example, the preferences in the market toward sustainably sourced products have led us to participate in various sustainability certification and verification schemes, such as RSPO, ISCC, ITSNC and POIG. To mitigate the risk, dedicated teams are established to ensure continual sustainability compliances and engagement with the stakeholders, customers, and public through meetings, sustainability disclosure platforms, and the annual Sustainability Report. For more information on our sustainability practices, please refer to https://www.musimmas.com/sustainability-report/
Reputation	Relevant, always included	With the increasing awareness of climate change, sustainability management plays an integral role in our business operations and reputation. Our sustainability practices framework is managed in our NDPE policy. An example of the risks includes investors and/or some banks starting to require sustainability assessment as one of their funding criteria. To communicate our sustainability progress and targets, Musim Mas annually publishes Sustainability Report and actively participates in various recognized third-party assessments such as CDP, Ecovadis, SPOTT, and PROPER to benchmark and showcase our sustainable progress at the highest level. Additionally, we are also working closely with the local community and other relevant parties (i.e. Siak and Pelalawan Landscape collaboration) to ensure that our actions are not only done in accordance with the FPIC principles but also help the surrounding communities. Lastly, Musim Mas through its relevant department, constantly monitor the media and effectively engage with the stakeholders and public (i.e. customers) through meetings, journal, and annual sustainability report, demonstrating the innovation and measures taken by Musim Mas. More information on the latest updates can be found at https://www.musimmas.com/newsroom/.
Acute physical	Relevant, always included	Acute physical including climate changes may lead to extreme weather conditions such as drought and flood. Consequently, this may reduce our oil palm yield which affects our financial performance. For example, drought or excessive rainfall can lower Fresh Fruit Bunch (FFB) production due to a forest fire or disruption of the fertilizer application program. To mitigate these, some measures taken include satellite monitoring such as the WRI Global Forest Watch Fires map to identify and monitor hotspots at and around our concessions. To date, approximately 5 million hectares at and around our concessions are monitored daily for hotspots across Indonesia. Additionally, we also initiate a fire-free village program along with the local communities to educate and encourage best agriculture practices and risks associated with the use of fire for land preparation. As of 2021, 74 villages accounting for approximately 450,000 ha are covered under Free Fire Village Program FFVP or Masyarakat Bebas Api, with 161 trainings conducted. To accelerate our NDPE progress, we collaborate with the Consortium of Resource Experts (CORE) - Proforest and Daemeter – on implementing NDPE commitments, the Extension Services Programme and landscape collaborations. For more information on fire management, please refer to https://www.musimmas.com/sustainability/fire-management-and-prevention/. The awareness of climate change and its impact may also bring about a change in customers' preferences. For this, we actively socialize and disclose our NDPE and sustainability policies through workshops and websites across the supply chain (https://www.musimmas.com/sustainability/).
Chronic physical	Relevant, always included	Considering Musim Mas operation is closely related to the ecosystems, chronic physical risks such as the ongoing global warming that led to a higher temperature can affect the yield of our palm oil production. Thus, parameters such as soil health and water balance are essential to be actively monitored and maintained. For example, the rising temperature may affect the productivity of our upstream operations. Recognizing the risk, Musim Mas implements best agricultural practices such as utilizing POME as land irrigation, reusing the bio-waste and organic matter from our plantations to return nutrients to the soil which promotes soil health, and utilizing internal or public tools such as WRI Global Forest Watch to monitor and assess hotspots due to extreme weather-related risks. For more information on Musim Mas sustainability practices, please refer to https://www.musimmas.com/sustainability/environmental-protection/.

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

Acute physical	Drought

Primary potential financial impact
Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
The occurrence of extreme weather such as drought and flood can lower the productivity of our operations and disrupt our palm oil sales, which in turn, affects the performance of the company. In 2015, Indonesia experienced the climatic phenomenon of El Nino. The El Nino phenomenon has led to lower rainfalls and higher temperatures contributing to drought stress for crops including oil palm crops. Our data suggested that a prolonged drought can lower the FFB yield by approximately 15%. Moreover, prolonged drought may also increase the risk of fire. Other extreme weather occurrences such as floods can affect the fertilizer application schedule, leading to a lower yield. Thus, this poses risks to Musim Mas.

Time horizon
Medium-term

Likelihood
About as likely as not

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
2975

Potential financial impact figure – maximum (currency)
3570

Explanation of financial impact figure
Adverse weather conditions can have significant impacts on the productivity of our operations, specifically, prolonged drought or floods that occur over several weeks. Our average CPO yield is estimated to be in the range of 5-6 MTCPO/ha. Hence, taking a reduction of yield by 15% due to extreme weather (i.e. prolonged drought), CPO production can drop to 4.25 - 5.1 MTCPO/ha (or lowered by 0.75 - 0.9 MTCPO/ha). Consequently, taking an average CPO price (2019-2021) of USD 700/MTCPO, the potential financial impact varies between USD 2975 - USD 3570 per hectare.

Cost of response to risk
200000

Description of response and explanation of cost calculation
Best management practices and operating procedures are carried out to alleviate the impacts of extreme weather scenarios, these practices include:
- Improvement of soil management through the implementation of best agri-practices. For example, stems and leaves from our plantations are mulched and applied as organic fertilizer. Dried decanter solids and boiler ash from our mills are repurposed as organic fertilizer at our plantations. This is to improve the soil nutrition and soil moisture retention capability and to ameliorate the drought effects. Moreover, this may also offset our fertiliser usage leading to lower GHG emissions
- Utilising POME as an irrigant and organic fertilizer to help alleviate the impacts of water scarcity during extreme weather phenomena such as El Nino
- Construction of water pond in our upstream operations areas as water reserves to mitigate the risk of a long drought
- Satellite monitoring such as the MODIS, NOAA, and GRASS is used to monitor for hotspots at and around our concessions. We also provide training and equip firefighting teams at all of our plantations to take action at the first sign of an outbreak. In 2021, we conducted 161 fire trainings in 74 villages covered by the FFVP and rewarded 42 villages for remaining fire-free. Additionally, zero burning policy and fire management practices are socialised and implemented in Musim Mas Group. For example, we installed fire breaks to slow the spread, should a fire occur

The construction of a water pond with a volume of approximately 1200m3 is estimated to cost around $700. The financial impact figure corresponds to the construction of water ponds in our MMG operations. The cost of construction can vary depending on the location, soil type, and the size of the water pond.

Comment
Progress towards the implementation of sustainability practices in our operations can be found at https://www.musimmas.com/sustainability-report/

Identifier
Risk 2

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
Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
With the growing international agreements concerning forest conservation, biodiversity protection, and emission reduction commitment, thus, the implementation of stricter International and/or national regulations must be ensured. For example, international guidelines such as the latest RED II may impact our financial performance with the updated emission factor and threshold in its GHG emissions. Failure in meeting the GHG threshold may limit the availability of qualified supply bases which may damage the brand, thus, leading to a loss of market. Thus, this poses risk to Musim Mas.

Time horizon
Medium-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)
5000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Financial impact due to changes in customers' behaviour and preferences could range widely from mild to severe. For example, if the European market shifts its preferences solely to demand more sustainable and certified palm oil products, then the financial impact will be milder in comparison to if the palm oil products are to be rejected completely. The impact on stricter sustainable demand is only limited to the cost needed in fulfilling the third-party certifications (including the operational cost to comply with the certification scheme standards) and supplier engagement costs, whereas the latter, the financial impact will be severe due to the loss of our major market. The financial impact corresponds to the certification cost per unit to be able to enter the European Market i.e. ISCC.

Cost of response to risk
4000000

Description of response and explanation of cost calculation
To anticipate the possible new requirements, Musim Mas taking the following initiatives to prepare ourselves for the new possible requirements. Our measures include the followings:
- Establishes standardized GHG data collection procedures
- Provides training on GHG calculation methods
- Creates engagement with suppliers and provides training regarding GHG and their importance
- Track and simulate GHG emissions to ensure our GHG emissions are maintained below the demanded threshold
- Achieves and maintains 100% sustainability certifications schemes such as RSPO, ISCC, ISPO throughout our supply chain. These will also serve as a credible benchmark in our operation to keep track of our sustainability progress. As of 2021, All 15 integrated mills and 18 mills have been RSPO and ISCC certified respectively.
- Promotes traceability tools such as Musim Mas Self-Assessment (SAT) Tool to engage with suppliers. As of 2021, 77% of suppliers have completed the form.
- Participates in various known public assessments and benchmarking programs including CDP, SPOTT, Ecovadis, etc. Through improvement in our sustainability practices, we ranked 3rd out of 100 palm oil companies globally in SPOTT 2021 (rising from the 6th in the previous year)
- Implements best Agri-practices and pledges to no deforestation, no peatland development regardless of its depth, emission reduction, waste management, traceability to plantations, etc.
- Collaborate with multiple stakeholders in various sustainability initiatives to assist surrounding communities and communicate our brand values. For example, the landscape approach surrounding Siak and Pelalawan involves local NGOs, communities, companies, and government agencies. For more information, please refer to https://www.musimmas.com/sustainability/landscape/

To ensure compliance and reduction in our GHG emissions, we have built 16 methane capture plants in our mills as of December 2021 with a total of 575,075 MT CO2e emissions avoided with another one scheduled in 2022. The cost of response corresponds to the capital cost of one methane capture plant ranging from USD 3 million to USD 4 million. Full information can be found on https://www.musimmas.com/sustainability/ndpe-policy/ and https://www.musimmas.com/sustainability-report/

Comment
Musim Mas takes active steps to go beyond industry-recognized sustainability standards and will continue to step up in response to critical industry issues in our quest to contribute to a more sustainable industry and an equitable world (https://www.musimmas.com/sustainability-report/).

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.

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

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
With the growing international agreements concerning climate change and GHG emission reduction commitment, the implementation of stricter International and/or national regulations become inevitable. Increasing brand value through sustainability certifications and environmental disclosure is beneficial for our business performance. Musim

Mas participates in many public assessments and benchmarking programs including CDP, Ecovadis, SPOTT, and PROPER to rate our sustainability commitments and progress at the highest level. Furthermore, third-party certifications such as RSPO, ISCC, POIG, etc verify that audits have been conducted independently, thus, ensuring proper implementation and compliance with the principles and criteria of the respective sustainability certification schemes. Our operations are audited and benchmarked annually against the principles and guidelines of respective certifications. Considering the vastly dynamic principles and guidelines of the sustainability certifications, dedicated teams are established to ensure continual adherence to the respective schemes. Regular training and workshops are also conducted to ensure adherence to the latest schemes. As of 2021, All 15 integrated mills have been RSPO certified and POIG verified. Moreover, our mills are also fully in compliance with the ISPO, ISCC, and ITSNC certification schemes, proving our commitment to implementing our NDPE and sustainability practices into our operations. Through improvement in our sustainability practices, we ranked 3rd out of 100 global palm oil companies in SPOTT 2021, rising from the 6th in the previous year. With the increasing demand for sustainable products, there is an opportunity for Musim Mas to better market products that fulfil the emission guidelines and are sustainably certified.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
9000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
As customers are becoming more aware of the importance of sustainability practices, the preferences in the market toward sustainably labelled products have increased. It is assumed that the increase in brand value is in line with the potential increase in sales of certified palm oil. The potential financial impact figure is then derived from (A) the estimated year-to-year increase in sales of certified palm oil by 2% and (B) the estimated revenue from sales of certified palm oil. In 2021, the sales of certified palm are estimated to represent around 450 million USD. Hence, the potential financial impact figure is estimated to be A X B = USD 9 million.

Cost to realize opportunity
5000

Strategy to realize opportunity and explanation of cost calculation
To seize this opportunity, Musim Mas takes actions such as:

- Adopts various well-recognized certification and verification schemes such as RSPO, POIG, ISCC, and ISPO to track and rate our sustainability progress including GHG emissions. As of 2021, All 15 integrated mills have been RSPO certified and POIG verified.
- Invests and takes technological approaches to reduce GHG emissions such as methane capture plant installation. As of December 2021, 16 methane capture plants have been completed in our mills with another one scheduled in 2022.
- Publicly disclose our annual progress, milestones, and targets of our sustainability commitments and practices through Musim Mas websites, stakeholders meetings, and Sustainability Report according to GRI standards. For more information, please refer to https://www.musimmas.com/sustainability-report/
- Partner and collaborate with other stakeholders to engage in landscape approaches to mitigate the risk of NDPE in our supply chains and communicate our brand values. For instance, Musim Mas collaborates with IDH (the Sustainable Trade Initiative), the Government of Aceh, Forum Konservasi Leuser (FKL), Pusat Unggulan Perkebunan Lestari (PUPL), downstream actors (Unilever, PepsiCo, General Mills, Nestle, AAK), local civil society organisations (Earthqualizer & Earthworm Foundation) and suppliers, including those outside our supply chain to have Aceh Tamiang verified as a deforestation-free and traceable commodities producer.
- Achieves full traceability to plantation throughout our supply chain. Presently, we have achieved 100% traceability to mill since 2015 and 94% traceability to plantation as of December 2021. We are on track to achieve 100% full traceability to plantation by December 2025.

The cost of response corresponds to the certification cost per unit to be able to enter the European Market i.e. ISCC. In 2021, all our processing units have been ISCC certified. All our ISCC certificates are available publicly on the ISCC website https://www.iscc-system.org/certificates/valid-certificates/.

Comment
Musim Mas takes active steps to go beyond industry-recognized sustainability standards and will continue to step up in response to critical industry issues in our quest to contribute to a more sustainable industry and equitable world.

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Use of new technologies

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
Methane is a by-product of the palm oil mill effluent (POME). It is usually released in the form of gas which is found to be detrimental to the environment. Recognizing this, Musim Mas invests heavily in Methane Capture Facilities to capture and utilize the gas to reduce our GHG emissions. Through biogas engine generators, the captured methane gas is then converted to generate electricity where the electricity will be used in the milling process and to provide 24-hour utilities for all the workers and their families living in the plantations. Additionally, it can also go to the surrounding local communities, and in some cases to the national grid in return for electricity credit.

Time horizon
Medium-term

Likelihood
Very 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)
10000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The figure corresponds to the annual monetary savings of our installed methane capture plants. These estimated savings are sourced from the substitution of diesel and electricity credit from the national grid.

Cost to realize opportunity
4000000

Strategy to realize opportunity and explanation of cost calculation
With the installation of 16 methane capture plants in our operations, we have avoided carbon emission of 575,075.25 MT CO2e in 2021. The Palm Oil Mill Effluent (POME) is processed anaerobically in a closed pond to be used as an electricity source. The cost to realize the opportunity corresponds to the estimated capital cost of a methane capture plant. The investment capital cost of one methane capture plant ranges from 3 million to 4 million USD depending on the FFB processed. Additionally, to maintain and operate the plants, there will be an operational cost that is already included in our overall operational cost. For this, the cost of response taken is corresponding to the capital cost. In line with our commitment to reducing GHG, we are looking to commission another methane capture plant in the upcoming year.

Comment
n/a

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan
No, but our strategy has been influenced by climate-related risks and opportunities, and we are developing a transition plan within two years

Publicly available transition plan
<Not Applicable>

Mechanism by which feedback is collected from shareholders on your transition plan
<Not Applicable>

Description of feedback mechanism
<Not Applicable>

Frequency of feedback collection
<Not Applicable>

Attach any relevant documents which detail your transition plan (optional)
<Not Applicable>

Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future
Following the COP26 climate summit, Musim Mas acknowledges the importance of developing a business strategy that will contribute to limiting warming to 1.5°C. While Musim Mas has yet to explicitly implement a transition plan aligned with a 1.5°C world, our sustainability policy has imposed sustainability standards at the highest level to our global operations. Our Sustainability Teams, Senior Management, and the Board are all involved in decision-making relating to our climate-related risks and opportunities to ensure emission reductions are adequately managed throughout our operations. During the top management meeting, quantitative data such as hotspots, GHG progress and qualitative data such as market dynamics and customer preferences are compiled and presented to the management as discussion materials. These materials then served as the basis for our operational target(s) and decision-making. For example, continuous commissioning of methane capture plants is planned and executed to achieve our 55% reduction emission goals, others include maintaining our RSPO, POIG, ISPO and ISCC certifications in our operations. Presently, we are working with an external consultant to develop our transition plan aligned with a 1.5°C world and will disclose accordingly when ready.

Explain why climate-related risks and opportunities have not influenced your strategy
<Not Applicable>

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy	Primary reason why your organization does not use climate-related scenario analysis to inform its strategy	Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future
Row 1	Yes, qualitative and quantitative	<Not Applicable>	<Not Applicable>

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Transition scenarios: Bespoke transition scenario	Company-wide	Unknown	Musim Mas takes the impact of climate change seriously and is strongly committed to minimizing greenhouse gas (GHG) emissions within our operations. For this, Musim Mas has set target that is to reduce GHG emission intensity in 2025 by 55% for RSPO-certified mills against the 2006 baseline. Audited annually, we use the RSPO PalmGHG to set the target and track the GHG emissions of our integrated mills towards the target of GHG emissions intensity of 2025. Our Sustainability Teams, Senior Management, and the Board are all involved in decision-making relating to our climate-related risks and opportunities to ensure emission reductions are adequately managed throughout our operations. Our strategies to reduce GHG emissions include but are not limited to no new planting on peat and in conservation areas, employing good water management practices on existing planted peat, implementing Good Agriculture Practices (GAP), maintaining soil health and structure, and operating methane capture facilities at all our mills. In the 2021 audit, our emission intensity was 52% less than our 2006 baseline and is well on track to achieve our 2025 target of a 55% GHG intensity reduction. For more information, please refer to https://www.musimmas.com/sustainability/environmental-protection/.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

With the growing international agreements concerning forest conservation, biodiversity protection, and emission reduction commitment, thus, the implementation of stricter International and/or national regulations must be ensured. For example, international guidelines such as the latest RED II may impact our financial performance with the updated emission factor and threshold in its GHG emissions. Failure in meeting the GHG threshold may limit the availability of qualified supply bases which may damage the brand, thus, leading to a loss of market. Considering this variable, Musim Mas needs to impose the highest sustainability standards across our operations to ensure robustness.

Results of the climate-related scenario analysis with respect to the focal questions

To anticipate the possible new requirements, Musim Mas taking the following initiatives to prepare ourselves for the new possible requirements. Our measures include the following:
- Establishes standardized GHG data collection procedures
- Provides training on GHG calculation methods
- Creates engagement with suppliers and provides training regarding GHG and their importance
- Track and simulate GHG emissions to ensure our GHG emissions are maintained below the demanded threshold
- Achieves and maintains 100% sustainability certifications schemes such as RSPO, ISCC, ISPO throughout our supply chains. These will also serve as a credible benchmark in our operations to keep track of our sustainability progress. As of 2021, All 15 integrated mills and 18 mills have been RSPO and ISCC certified respectively.
- Promotes traceability tools such as Musim Mas Self-Assessment (SAT) Tool to engage with suppliers. As of 2021, 77% of suppliers have completed the form.
- Participates in various known public assessments and benchmarking programs including CDP, SPOTT, Ecovadis, etc. Through improvement in our sustainability practices, we ranked 3rd out of 100 palm oil companies globally in SPOTT 2021 (rising from the 6th in the previous year)
- Implements best Agri-practices and pledges to no deforestation, no peatland development regardless of its depth, emission reduction, waste management, traceability to plantations, etc.
- Collaborate with multiple stakeholders in various sustainability initiatives to assist surrounding communities and communicate our brand values. For example, the landscape approach surrounding Siak and Pelalawan involves local NGOs, communities, companies, and government agencies. For more information, please refer to https://www.musimmas.com/sustainability/landscape/.

To ensure compliance and reduction in our GHG emissions, we have built 16 methane capture plants in our mills as of December 2021 with a total of 575,075 MT CO2e emissions avoided with another one scheduled in 2022.

Full information on our sustainability practices can be found on https://www.musimmas.com/sustainability/, https://www.musimmas.com/sustainability/ndpe-policy/, and https://www.musimmas.com/sustainability-report/

C3.3

(C3.3) 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	With the growing international agreements concerning climate change and GHG emission reduction commitment, the implementation of stricter International and/or national regulations become inevitable. For example, the decision of the international market to pose stricter sustainability guidelines toward the import of palm oil has impacted the market. The changes in European market preferences toward sustainably sourced products have led us to further improve and promote our sustainability practices across our supply chain. Recognizing the dynamics of the market, we have publicly announced our sustainability commitment with the launch of our first sustainability policy in 2014. To track and evaluate our sustainability progress, we are independently audited annually against various sustainability certification and verification schemes, such as RSPO, ISCC, POIG, ISPO. Furthermore, we also annually disclose our sustainability progress, targets, and achievements to our customers and relevant stakeholders through well-recognized bodies such as CDP, Ecovadis, SPOTT, and PROPER as well as our internal Sustainability Report (https://www.musimmas.com/sustainability-report/). In 2021, through improvement in our sustainability practices, we ranked 3rd out of 100 palm oil companies in the overall score of SPOTT (jumped from 6th in the previous year).
Supply chain and/or value chain	Yes	Following our NDPE policy, we focus on eliminating deforestation, peatland development, and the slash-and-burn land clearing method. This framework has led us to improve our monitoring tools such as satellites and drones, implement High Carbon Stock Assessment (HCSA), and develop a traceability mechanism to identify the FFB source area which aligns with our NDPE vision. As of 2021, 93% of our suppliers either have an NDPE policy or adopted the Musim Mas Sustainability Policy. Presently, we have achieved 100% traceability to mill since 2015 and 94% traceability to plantation per December 2021. We are on track to achieve full traceability to plantations by 2025. In recent years, suppliers are required to complete Musim Mas Self-Assessment Tool (SAT) which is an exhaustive set of questions against our NDPE requirements. As of 2021, 77% of our suppliers have completed the Self-Assessment Tool.
Investment in R&D	Yes	Recognizing the need to address growing global demand, Musim Mas continues to maximize our oil palm yield while consciously mitigating environmental impacts. Musim Mas R&D team continues to optimize agriculture practices, including efficient usage of fertilizers and pesticides to reduce environmental impacts such as climate change and eutrophication. In addition, we also implement Integrated Pest Management (IPM) where we use barn owls to reduce rat population. This procedure is expected to reduce the usage of rodenticides. In 2019, we have successfully transitioned away from using benomyl and glufosinate-ammonium, bringing our total to four-phased out pesticides since 2018. In 2020, we also successfully phased out two pesticides namely Cypermethrin and Mancozeb.
Operations	Yes	To ensure continual compliance to new regulations concerning climate change and sustainability aspects, we implement several emission reduction activities such as methane capture installation, no new planting and development on high carbon stock area and peatland, shifting fossil fuel usage to biofuel, etc. All these efforts are to ensure that our target towards a lower carbon emission can be achieved. As of 2021, we have successfully constructed and operated 16 methane capture plants in our palm oil mills.

C3.4

(C3.4) 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	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets Liabilities	With the growing international agreements concerning climate change and GHG emissions reduction commitment, the implementation of stricter International and/or national regulations become inevitable. The increasing demand for sustainable labelled products has propelled us to further improve our sustainability practices. Recognizing the importance of sustainability and climate change, the budget to improve our environmental performance is heavily considered in our financial planning. Depending on the action plans, these improvements might require additional capital and operating expenditures. These improvements include but are not limited to achieving and maintaining various certifications schemes (i.e. RSPO, ISCC, POIG, etc.), building more methane capture plants in our mills, and promoting smallholders collaboration. In 2021, 16 methane capture plants have been built and 2295 smallholders have achieved RSPO certification. Following our sustainability policy and financial planning, Musim Mas will continuously improve our sustainability practices. For details on our sustainability progress, milestones, and targets, please visit https://www.musimmas.com/sustainability-report/. Moreover, please refer to https://www.musimmas.com/sustainability/certifications/ to see the status and progress of our certifications.

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

2016

Target coverage

Business activity

Scope(s)
Please select

Scope 2 accounting method
<Not Applicable>

Scope 3 category(ies)
<Not Applicable>

Intensity metric
Metric tons CO2e per metric ton of product

Base year
2006

Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)
5.96

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure
<Not Applicable>

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure
<Not Applicable>

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure
<Not Applicable>

% of total base year emissions in all selected Scopes covered by this intensity figure
100

Target year
2025

Targeted reduction from base year (%)
55

Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]
2.682

% change anticipated in absolute Scope 1+2 emissions
0

% change anticipated in absolute Scope 3 emissions
0

Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)
<Not Applicable>

Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)
2.87

% of target achieved relative to base year [auto-calculated]
94.2647956070775

Target status in reporting year
Underway

Is this a science-based target?
No, but we anticipate setting one in the next 2 years

Target ambition
<Not Applicable>

Please explain target coverage and identify any exclusions
Our GHG emission analysis is conducted using Roundtable Sustainable Palm Oil (RSPO) PalmGHG calculator, which is a life cycle analysis (LCA)-based calculator. Our target is a 55% reduction in emissions intensity by 2025, against our 2006 baseline covering all of our 15 integrated mills. The 15 integrated mills has obtained RSPO certification and are annually audited against RSPO Principles and Guidances including GHG emissions calculations. The reduction in emission intensity is the culmination of our sustainability practices such as cessation of new planting on peat and high carbon stock area, installation of methane capture plants, a shift of fossil fuel usage to biofuel, and implementation of integrated pest management practices to reduce pesticide usage. Additionally, Musim Mas R&D department also strives to keep on improving our oil yield and land-use efficiency to further lower our emission intensity. Recognising the importance of climate change including the 1.5-degree scenario, we are presently engaging with an external consultant to validate and account for our scope 1,2,3 emissions and set reduction targets and action plans for the respective scopes.

Plan for achieving target, and progress made to the end of the reporting year
In 2021, Musim Mas has avoided 575,075 MT CO2e following the installation of 16 methane capture plants resulting in an emission intensity of 2.87 tCO2e/mtCPO. The calculation of the emission intensity follows the RSPO PalmGHG calculator and is audited annually. Moreover, our strategies to reduce GHG emissions include but are not

limited to no new planting on peat and in conservation areas, employing good water management practices on existing planted peat, implementing Good Agriculture Practices (GAP), maintaining soil health and structure, and operating methane capture facilities at all our mills. Through Good Agricultural Practices (GAP) such as mulching stems and leaves from our plantations and repurposing dried decanter solids and boiler ash from our mills as organic fertilizer, we can minimize our fertilizer consumption leading to lower emissions. With these best practices, we are on track to achieve the 55% GHG emission reduction target by 2025.

List the emissions reduction initiatives which contributed most to achieving this target
<Not Applicable>

C4.2

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

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
2021

Target coverage
Business division

Target type: absolute or intensity
Absolute

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

Engagement with suppliers	Other, please specify (%RSPO certification)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2021

Figure or percentage in base year
65

Target year
2024

Figure or percentage in target year
100

Figure or percentage in reporting year
65

% of target achieved relative to base year [auto-calculated]
0

Target status in reporting year
New

Is this target part of an emissions target?
Engagement with smallholders can lead to an increase in yields (i.e. socialisation on good agricultural practices), better access to national and international markets, improvement in livelihoods, and a reduction in the risk of land conversion (deforestation). This is significant as applying Good Agricultural Practices (GAP) helps in reducing fertiliser usage, thus, lowering the emissions as well as educating smallholders on the importance of conserving high conservation value areas which in turn mitigate the risk of land conversion and climate change. Moreover, we also educate communities about the zero-burning policy to mitigate the risk of fire. Furthermore, as a member of the Fire Free Alliance, we also launched our Fire Free Village Programme (FFVP) to engage and educate local communities including smallholders in protecting forests from fire. As of December 2021, our FFVP covered 74 villages spanning 450,769 hectares and has conducted 161 trainings in the communities. In 2021, 42 villages were awarded for being fire-free.

Is this target part of an overarching initiative?
Remove deforestation

Please explain target coverage and identify any exclusions
The target covers our existing smallholders including independent smallholders of 2021.

Plan for achieving target, and progress made to the end of the reporting year
To ensure credibility that Musim Mas's supply chain is in full and beyond compliance with the highest sustainability standards, Musim Mas aims to achieve 100% RSPO certification for our existing smallholders by 2024. As of 2021, approximately 65% of smallholders have obtained RSPO certification. Musim Mas will continue to actively engage and socialise the importance of sustainability certification to smallholders.

List the actions which contributed most to achieving this target
<Not Applicable>

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 CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	1	20000
Implementation commenced*	0	0
Implemented*	16	575075
Not to be implemented	0	0

C4.3b

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

Initiative category & Initiative type

Fugitive emissions reductions	Agricultural methane capture

Estimated annual CO2e savings (metric tonnes CO2e)

575075

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

10000000

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

60000000

Payback period

4-10 years

Estimated lifetime of the initiative

21-30 years

Comment

Conventionally, POME is stored in a large open pond where its treatment is dependent on anaerobic bacteria to break down the organic matter in the wastewater. To overcome the detrimental emission of methane gas, Musim Mas installs methane capture facilities with the purpose to capture the methane gas, thus, reducing the emission from mills operations. The methane capture plants utilise the captured methane gas as a gas engine feed to generate electricity. The generated electricity is then used for mill operation and workers' housing where the excess will be sent to the national grid in return for electricity credit. In 2021, this process has avoided 575,075 tCO2eq of GHG emissions through our 16 methane capture plants. Moreover, another methane capture plant is scheduled to commission in 2022.

C4.3c

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

Method	Comment
Dedicated budget for other emissions reduction activities	To ensure continual adherence to local, national, and international regulations, Musim Mas strives to continuously reduce the emission from our operations. For this, we always provide a dedicated budget that will be used for emission reduction activities such as methane capture facilities for Palm Oil Mill Effluent (POME), research and development of fertilizers and pesticides, development of GAP, and training and workshops to improve GAP in our operations. More information on our sustainability practices, please visit https://www.musimmas.com/sustainability-report/.

C-AC4.4/C-FB4.4/C-PF4.4

(C-AC4.4/C-FB4.4/C-PF4.4) Do you implement agriculture or forest management practices on your own land with a climate change mitigation and/or adaption benefit?

Yes

C-AC4.4a/C-FB4.4a/C-PF4.4a

(C-AC4.4a/C-FB4.4a/C-PF4.4a) Specify the agricultural or forest management practice(s) implemented on your own land with climate change mitigation and/or adaptation benefits and provide a corresponding emissions figure, if known.

Management practice reference number
MP1

Management practice
Land use change

Description of management practice
Prior to any new planting, land-use planning is conducted following Musim Mas Sustainability Policy to identify whether the targeted land is under any category of High Carbon Stock (HCS). If the land is identified as a conservation area, the land will be set aside.

Primary climate change-related benefit
Emission reductions (mitigation)

Estimated CO2e savings (metric tons CO2e)
470000

Please explain
The figure is quantified using the land carbon stock default value provided by the RSPO PalmGHG. Assuming all our HCS areas of 2000 ha are disturbed forests and taking the difference between the emission factor of oil palm and disturbed forests of 235.29 tCO2e/ha, an emission savings of 470,000 tCO2e is estimated.

Management practice reference number
MP2

Management practice
Fertilizer management

Description of management practice
By-products from our processing processes, such as boiler ash and dry decanter solid are used as organic fertilizers in our plantations. These by-products contain N and P contents which can be used to substitute N-fertilizers and P-fertilizers. Consequently, the reduction in fertilizer usage leads to better environmental impacts (i.e. eutrophication) and healthier financial performance.

Primary climate change-related benefit
Reduced demand for fertilizers (adaptation)

Estimated CO2e savings (metric tons CO2e)
0

Please explain
The savings from these practices have not been quantified.

Management practice reference number
MP3

Management practice
Integrated pest management

Description of management practice
In the effort to reduce the usage of synthetic pesticides, Musim Mas takes the approach of using integrated pest management practices. For example, the usage of barn owl programs to control the rat populations and the utilization of Cassia Cobanensis, Tunera Subulata, and Antigonon Leptopus to control the caterpillar populations.

Primary climate change-related benefit
Reduced demand for pesticides (adaptation)

Estimated CO2e savings (metric tons CO2e)
0

Please explain
The savings from these practices have not been quantified.

Management practice reference number
MP4

Management practice
Fire control

Description of management practice
Musim Mas commits to adhere to our zero-burn policy in our plantations. For this, we actively engage with our smallholders to develop best agricultural practices (i.e. alternative methods for land clearance) while simultaneously encouraging them to pursue RSPO certification. Additionally, we also continue to improve our fire management practices to mitigate the fire risk. For instance, besides the RADD partnership and satellite monitoring, we also provide training and firefighting equipment to the villages along with monetary or non-monetary incentives if the villages remain to be fire-free. Recognising the risk of fire, as a member of the Fire Free Alliance, we launched our Fire Free Village Programme (FFVP) to engage and educate local communities including smallholders in protecting forests from fire. As of December 2021, our FFVP covered 74 villages spanning 450,769 hectares and has conducted 161 trainings in the communities. In 2021, 42 villages were awarded for being fire-free.

Primary climate change-related benefit
Emission reductions (mitigation)

Estimated CO2e savings (metric tons CO2e)
0

Please explain
The savings from these practices have not been quantified.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?
Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation
Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon
Other, please specify (RSPO and ISCC)

Type of product(s) or service(s)

Other	Other, please specify (Palm oil and its derivatives)

Description of product(s) or service(s)
Musim Mas is a vertically integrated palm oil business offering an extensive portfolio of palm oil products and derivatives including Crude Palm Oil (CPO), Refined Bleach and Deodorized Palm Oil (RBDPO), and Palm Methyl Esther (PME). Our products are sold under the certification of RSPO and ISCC which set strict criteria for emission and sustainable practices. The ISCC certification scheme complies with the Renewable Energy Directive (RED) which is the legal framework for the implementation of renewable energy targets for the transport sector in the European Union. Following the requirements of the RED II, ISCC requires a minimum level of GHG savings for final biofuels of at least 50%. Additionally, RSPO requires the certification units to identify and assess their GHG emissions along with the implementation and monitoring plan to reduce and minimize the emissions.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)
Yes

Methodology used to calculate avoided emissions
Other, please specify (ISCC)

Life cycle stage(s) covered for the low-carbon product(s) or services(s)
Cradle-to-gate

Functional unit used
Megajoule biofuel

Reference product/service or baseline scenario used
Following the ISCC EU 205 v4.0, a fossil fuel comparator of biofuels for transport is taken as the reference product.

Life cycle stage(s) covered for the reference product/service or baseline scenario
Cradle-to-gate

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario
0.000072

Explain your calculation of avoided emissions, including any assumptions
The figure corresponds to the emissions savings with the unit of tCO2e per MJ biofuel. The calculation is based on a life-cycle approach from upstream operations to our refineries (Cradle-to-Gate) calculated following the ISCC EU 205 guidances. The difference in GHG emissions per MJ between the biofuels produced (22 gCO2e/MJ) and the fossil fuel comparator (94 gCO2e/MJ) is taken as the potential emission savings.

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year
70

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?
No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?
No

Name of organization(s) acquired, divested from, or merged with
<Not Applicable>

Details of structural change(s), including completion dates
<Not Applicable>

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in boundary	In this reporting year, we have excluded emissions that arose from Musim Mas's offices and warehouse operations globally.

C5.1c

(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?

	Base year recalculation	Base year emissions recalculation policy, including significance threshold
Row 1	No, because the impact does not meet our significance threshold	The emissions from these sources are excluded as they are insignificant (estimated to be approximately 1%) in comparison to the total emissions from the production and processing facilities of our operations (i.e. plantations, mills, refineries). As such, the impact is considered negligible.

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start
January 1 2016

Base year end
December 31 2016

Base year emissions (metric tons CO2e)
1119103

Comment
n/a

Scope 2 (location-based)

Base year start
January 1 2016

Base year end
December 31 2016

Base year emissions (metric tons CO2e)
212393

Comment
n/a

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 1: Purchased goods and services

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 4: Upstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 5: Waste generated in operations

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 6: Business travel

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 9: Downstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 11: Use of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 12: End of life treatment of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 15: Investments

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol Agricultural Guidance: Interpreting the Corporate Accounting and Reporting Standard for the Agricultural Sector
The Greenhouse Gas Protocol: Scope 2 Guidance

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)

1635429

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

N/A

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 have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment
N/A

C6.3

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

Reporting year

Scope 2, location-based
411579

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
<Not Applicable>

End date
<Not Applicable>

Comment
N/A

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
Musim Mas's offices and warehouses operations globally

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 evaluated

Explain why this source is excluded
The emissions from these sources are excluded as they are insignificant (estimated to be approximately 1%) in comparison to the total emissions from the production and processing facilities of our operations (i.e. plantations, mills, refineries). As such, they are considered not relevant.

Estimated percentage of total Scope 1+2 emissions this excluded source represents
1

Explain how you estimated the percentage of emissions this excluded source represents
We have collected our offices' and warehouses' energy consumption for the past years, thus, considering the negligible energy consumption as compared to the processing facilities, these data are excluded from our scope.

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, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Capital goods

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Capital goods used in palm oil industry lasted for decades, thus, the scope 3 emission from amortization of capital goods emission is very small and can be ignored

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

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Upstream transportation and distribution

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Waste generated in operations

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
The waste and residue generated in the operations are mostly treated within the operation boundaries (included in scope 1 emission), otherwise, they are reused and/or recycled.

Business travel

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly. On that note, Scope 3 emission from business travels is in negligible amount. Thus, it is not relevant.

Employee commuting

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
The majority of Musim Mas's employees are in close vicinity to the workplace. For example, in the case of plantations or processing sites, most employees stay in the company's messes and use company transport facilities (i.e. bus) or walk to commute. For this, the commuting emission is negligible.

Upstream leased assets

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
This emission category does not apply to Musim Mas's operations.

Downstream transportation and distribution

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Processing of sold products

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Musim Mas delivers many intermediate products to many customers globally. Processing methodology of the sold products may differ from one company to the others. We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Use of sold products

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Musim Mas delivers many intermediate products to many customers globally. Processing methodology of the sold products may differ from one company to the others. We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

End of life treatment of sold products

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Musim Mas delivers many intermediate products to many customers globally. Processing methodology of the sold products may differ from one company to the others. We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
This emission category does not apply to Musim Mas's operations.

Franchises

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
This emission category does not apply to Musim Mas's operations.

Investments

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Other (upstream)

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

Other (downstream)

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We are currently in the process of accounting for our Scope 3 emissions. the figure will be disclosed accordingly.

C-AC6.8/C-FB6.8/C-PF6.8

(C-AC6.8/C-FB6.8/C-PF6.8) Is biogenic carbon pertaining to your direct operations relevant to your current CDP climate change disclosure?
Yes

C-AC6.8a/C-FB6.8a/C-PF6.8a

(C-AC6.8a/C-FB6.8a/C-PF6.8a) Account for biogenic carbon data pertaining to your direct operations and identify any exclusions.

CO2 emissions from land use management

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain
Ensuring best Agri practices in our operations, Musim Mas is annually audited against various sustainability standards.

CO2 removals from land use management

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain
Ensuring best Agri practices in our operations, Musim Mas is annually audited against various sustainability standards.

Sequestration during land use change

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain
Ensuring best Agri practices in our operations, Musim Mas is annually audited against various sustainability standards.

CO2 emissions from biofuel combustion (land machinery)

Emissions (metric tons CO2)
6434

Methodology
Default emissions factors

Please explain
These emissions relate to biofuel consumption within our plantation operations.

CO2 emissions from biofuel combustion (processing/manufacturing machinery)

Emissions (metric tons CO2)
2584920

Methodology
Default emissions factors

Please explain
These emissions relate to biofuel consumption within our processing operations (mills and refineries).

CO2 emissions from biofuel combustion (other)

Emissions (metric tons CO2)
7550

Methodology
Default emissions factors

Please explain
These emissions relate to biofuel consumption within our non-processing operations (shipping).

C-AC6.9/C-FB6.9/C-PF6.9

(C-AC6.9/C-FB6.9/C-PF6.9) Do you collect or calculate greenhouse gas emissions for each commodity reported as significant to your business in C-AC0.7/FB0.7/PF0.7?

Agricultural commodities
Palm Oil

Do you collect or calculate GHG emissions for this commodity?
Yes

Please explain
Our emissions are related to cultivating, milling, refining and processing oil palm and its derivatives.

C-AC6.9a/C-FB6.9a/C-PF6.9a

(C-AC6.9a/C-FB6.9a/C-PF6.9a) Report your greenhouse gas emissions figure(s) for your disclosing commodity(ies), explain your methodology, and include any exclusions.

Palm Oil

Reporting emissions by
Total

Emissions (metric tons CO2e)
2047008

Denominator: unit of production
<Not Applicable>

Change from last reporting year
Lower

Please explain
Our emissions are lower than the previous year since there is a newly operated methane capture and lower consumption of natural gas in our processing facilities. The emissions are quantified using a calculator provided by the GHG Protocol.

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure
0.19

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
2047008

Metric denominator
metric ton of product

Metric denominator: Unit total
10759065

Scope 2 figure used
Location-based

% change from previous year
6

Direction of change
Decreased

Reason for change
Our emissions are lower than the previous year since there is a newly operated methane capture facility and lower consumption of natural gas in our processing facilities. Moreover, there has been a slight increase in our production as of last year, thus, leading to a lower emission intensity. The emissions are quantified using a calculator provided by the GHG Protocol.

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	1234495	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	21087	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	370035	IPCC Fifth Assessment Report (AR5 – 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)
Indonesia	1471467
Malaysia	13569
China	79
India	34461
Spain	51342
Netherlands	372
Italy	11332
Viet Nam	4442
Singapore	48366

C7.3

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

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Plantations	361356
Palm Oil Mills	53814
Refineries and oleochemicals	1127658
Shipping	92601

C-AC7.4/C-FB7.4/C-PF7.4

(C-AC7.4/C-FB7.4/C-PF7.4) Do you include emissions pertaining to your business activity(ies) in your direct operations as part of your global gross Scope 1 figure?

Yes

C-AC7.4a/C-FB7.4a/C-PF7.4a

(C-AC7.4a/C-FB7.4a/C-PF7.4a) Select the form(s) in which you are reporting your agricultural/forestry emissions.

Emissions disaggregated by category (advised by the GHG Protocol)

C-AC7.4b/C-FB7.4b/C-PF7.4b

(C-AC7.4b/C-FB7.4b/C-PF7.4b) Report the Scope 1 emissions pertaining to your business activity(ies) and explain any exclusions. If applicable, disaggregate your agricultural/forestry by GHG emissions category.

Activity
Agriculture/Forestry

Emissions category
Mechanical

Emissions (metric tons CO2e)
18319

Methodology
Default emissions factor

Please explain
Following GHG protocol, the corresponding emissions refer to stationary and mobile combustions

---

Activity
Agriculture/Forestry

Emissions category
Non-mechanical

Emissions (metric tons CO2e)
343037

Methodology
Default emissions factor

Please explain
Following GHG protocol, the corresponding emissions refer to fertiliser usage and peat oxidation

---

Activity
Processing/Manufacturing

Emissions category
Mechanical

Emissions (metric tons CO2e)
1156752

Methodology
Default emissions factor

Please explain
Following GHG protocol, the corresponding emissions refer to stationary and mobile combustions of our processing facilities

---

Activity
Processing/Manufacturing

Emissions category
Non-mechanical

Emissions (metric tons CO2e)
24720

Methodology
Default emissions factor

Please explain
Following GHG protocol, the corresponding emissions refer to wastewater from our processing facilities

---

Activity
Distribution

Emissions category
Mechanical

Emissions (metric tons CO2e)
92601

Methodology
Default emissions factor

Please explain
Following GHG protocol, the corresponding emissions refer to stationary and mobile combustions of our shipping facilities

---

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Indonesia	362120	0
Malaysia	7184	0
China	2364	0
India	16172	0
Spain	11532	0
Netherlands	6822	0
Italy	2896	0
Viet Nam	2490	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)
Refineries and oleochemicals	411452	0
Shipping	128	0

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?

Decreased

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	29000	Decreased	1.4	Gross Scope 1+2 emissions decreased by 1.4%, due to the reduction of fossil-based fuel, changes from B20 to B30, and reduction in natural gas consumption. Instead, our biomass consumption has increased in our operations. Through these activities, we estimate to reduce our emissions by 29,000 tons of CO2e, and our total S1 and S2 emissions in the previous year were 2,114,103.56 tons CO2e, therefore we arrived at -1.4% through (-29,000/2,114,103.56) * 100 = -1.4% decrease in emissions.
Other emissions reduction activities	15000	Decreased	0.7	Gross Scope 1+2 emissions decreased by 0.7%, due to a newly operated methane capture plant in our operation. Previously treated aerobically (open pond), the wastewater is now treated anaerobically (closed pond) in methane capture facilities to produce electricity. Through these activities, we estimate to reduce our emissions by 15,000 tons of CO2e, and our total S1 and S2 emissions in the previous year were 2,114,103.56 tons CO2e, therefore we arrived at -1.4% through (-15,000/2,114,103.56) * 100 = -0.7% decrease in emissions.
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output		<Not Applicable>		
Change in methodology		<Not Applicable>		
Change in boundary	24500	Decreased	1.1	As mentioned in C6.4a, we have excluded offices and warehouse scopes in our disclosure as they are negligible as compared to our production and processing facilities. Thus, 24,500 tons of CO2e are excluded following the change in boundary, and our total S1 and S2 emissions in the previous year were 2,114,103.56 tons CO2e, therefore we arrived at -1.1% through (-24,500/2,114,103.56) * 100 = -1.1% decrease in emissions.
Change in physical operating conditions		<Not Applicable>		
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 5% but less than or equal to 10%

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	No
Consumption of purchased or acquired cooling	No
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)	7900149	6891647	14791796
Consumption of purchased or acquired electricity	<Not Applicable>	0	544587	544587
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	7900149	7436234	15336382

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	Yes
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.

Sustainable biomass

Heating value
LHV

Total fuel MWh consumed by the organization
7900083

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
25876

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
7874208

Comment
n/a

Other biomass

Heating value
LHV

Total fuel MWh consumed by the organization
65

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
65

Comment
n/a

Other renewable fuels (e.g. renewable hydrogen)

Heating value
LHV

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
0

Comment
n/a

Coal

Heating value
LHV

Total fuel MWh consumed by the organization
5055396

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
5055396

Comment
n/a

Oil

Heating value
LHV

Total fuel MWh consumed by the organization
514080

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
88853

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
425228

Comment
n/a

Gas

Heating value
LHV

Total fuel MWh consumed by the organization
1322171

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
1322171

Comment
n/a

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value
LHV

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
0

Comment
n/a

Total fuel

Heating value
LHV

Total fuel MWh consumed by the organization
14791796

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
114728

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
0

MWh fuel consumed for self- cogeneration or self-trigeneration
14677067

Comment
n/a

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	5209489	5136974	2828511	2755996
Heat	114728	114728	25876	25876
Steam	7338534	7338534	3937137	3937137
Cooling	2201560	2201560	1181141	1181141

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area
Indonesia

Consumption of electricity (MWh)
3184258.41

Consumption of heat, steam, and cooling (MWh)
5196314.68

Total non-fuel energy consumption (MWh) [Auto-calculated]
8380573.09

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Malaysia

Consumption of electricity (MWh)
36247.98

Consumption of heat, steam, and cooling (MWh)
39.74

Total non-fuel energy consumption (MWh) [Auto-calculated]
36287.72

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
China

Consumption of electricity (MWh)
2466.26

Consumption of heat, steam, and cooling (MWh)
122.37

Total non-fuel energy consumption (MWh) [Auto-calculated]
2588.63

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
India

Consumption of electricity (MWh)
91719.68

Consumption of heat, steam, and cooling (MWh)
5288.61

Total non-fuel energy consumption (MWh) [Auto-calculated]
97008.29

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Spain

Consumption of electricity (MWh)
123315.55

Consumption of heat, steam, and cooling (MWh)
88.65

Total non-fuel energy consumption (MWh) [Auto-calculated]
123404.2

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Netherlands

Consumption of electricity (MWh)
16030.54

Consumption of heat, steam, and cooling (MWh)
148.76

Total non-fuel energy consumption (MWh) [Auto-calculated]
16179.3

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Italy

Consumption of electricity (MWh)
26378.76

Consumption of heat, steam, and cooling (MWh)
88.51

Total non-fuel energy consumption (MWh) [Auto-calculated]
26467.27

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Viet Nam

Consumption of electricity (MWh)
11314.34

Consumption of heat, steam, and cooling (MWh)
184.04

Total non-fuel energy consumption (MWh) [Auto-calculated]
11498.38

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Singapore

Consumption of electricity (MWh)
61220.62

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]
61220.62

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

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	No third-party verification or assurance
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No emissions data provided

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?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Progress against emissions reduction target	Palm Oil Innovation Group (POIG) & Roundtable on Sustainable Palm Oil (RSPO)	Our GHG calculation emission intensity for our integrated mills is audited and verified annually against RSPO principles and guidance. Progress toward the target of 55% emission intensity reduction by 2025 and emissions intensity baseline have been verified through POIG verification. FINAL-report-POIG-Remote-Audit-Musim-Mas-Group-2020.pdf

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)?

No, but we anticipate being regulated in the next three years

C11.1d

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

Recognising the hot topics of climate change and carbon trading, the Indonesian government has recently set Nationally Determined Contribution (NDC) and is to impose carbon tax on Industries including the Palm Oil sector as part of government commitment to sustain 1.5°C globally. For this, Musim Mas through its sustainability policy and initiatives prepares to work together to achieve the objectives. Among many sustainability initiatives, third-party certification schemes such as RSPO, ISCC, ISPO, and POIG are regarded as of high importance to our operations as these ensure continuous credibility and transparency of our sustainability practices. We will continue to maintain these certifications in our operations. Moreover, we also actively update our sustainability policy to follow the latest sustainability standards and requirements. The scope of the Musim Mas Group Sustainability Policy encompasses all our operations and business units worldwide. To maintain relationships with our customers and other stakeholders, we communicate our sustainability progress, milestones, and targets through our annual sustainability policy and involve in partnerships such as the landscape approach in Aceh.

C11.2

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

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase
Credit origination

Project type
Methane avoidance

Project identification
Prior to the project, the mill is treating its POME in open lagoons. After treatment in open lagoons, POME is treated in a polishing plant before being utilized for land application in the mill's plantations. Sludge that accumulates in the open lagoons and in the polishing system is removed periodically and used for land application in the mill's plantations. Under the project activity, the methane –that would have been emitted to the atmosphere by the anaerobic open lagoons- is captured and combusted in the biogas engine to provide electricity.

Verified to which standard
Other, please specify (RSPO)

Number of credits (metric tonnes CO2e)
51517.37

Number of credits (metric tonnes CO2e): Risk adjusted volume
51517.37

Credits cancelled
No

Purpose, e.g. compliance
Voluntary Offsetting

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/clients
Yes, other partners in the value chain

C12.1a

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

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Run an engagement campaign to educate suppliers about climate change
Provide training, support, and best practices on how to make credible renewable energy usage claims
Directly work with suppliers on exploring corporate renewable energy sourcing mechanisms

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

% of supplier-related Scope 3 emissions as reported in C6.5
0

Rationale for the coverage of your engagement
Engaging with suppliers to adopt the standards comprising Musim Mas' NDPE commitments is at the forefront of our efforts. Because their progress will determine the success of our entire supply chain, we engage with all suppliers on our policy obligations and require them to: i) attend our NDPE workshops, ii) submit NDPE commitments, iii) complete the Musim Mas Self-Assessment Tool (SAT). Additionally, we also support and encourage our smallholders and third-party suppliers to pursue RSPO certification by providing Agri practices knowledge. By doing this, we can work towards eliminating all deforestation and ensuring traceability within our supply chains. Moreover, through a combination of monitoring methods such as Earthqualizer and RADD satellite monitoring platform, as of 2021, we monitor more than nine million hectares across Indonesia and Malaysia covering all of our suppliers for deforestation and peat development. If our supplier is found to be noncompliant with the NDPE policy, we will engage with the supplier in question and exclude them if necessary.

Impact of engagement, including measures of success
To ensure top-down NDPE compliance, suppliers are to complete Musim Mas Self-Assessment Tool (SAT) which is an exhaustive set of questions against our NDPE requirements. This evaluation enables suppliers to self-declare information about their operations which allows Musim Mas to identify potential risk areas at the mill level. As of December 2021, 77% of our suppliers have completed their assessments. Moreover, Musim Mas collaborates with IFC (International Finance Corporation) to develop and implement the pilot programs in North Sumatra (Rantauprapat) and Riau (Pelalawan, Rokan Hilir, and Rokan Hulu), Indonesia. Our modules mirror the RSPO's Principles and Criteria (P&C) as we prepare the smallholders for RSPO certification. The program modules focus on four pillars: Environment (i.e. No burning); Business management (i.e. Market access, Good Agricultural Practices); Social (i.e. food security); and Other issues that smallholders may face in their journey toward sustainable palm oil (i.e. administration process). As of 2021, 2295 smallholders have been RSPO certified. Presently, we have achieved 100% traceability to mill since 2015 and 94% traceability to plantation as of December 2021. We are on track and gearing toward 100% full traceability to plantation by December 2025. To see more of our sustainability progress and targets, please refer to our annual Sustainability Report (https://www.musimmas.com/sustainability-report/).

Comment
Our suppliers are made aware of our Sustainability Policy, Sustainability Certification Schemes as well as GHG calculation requirement.

C12.1b

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

Type of engagement & Details of engagement

Education/information sharing	Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number
100

% 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
One of the key pillars of our sustainability policy is to maintain responsible and enduring relationships with suppliers, customers and stakeholders. We maintain an open dialogue with our stakeholders and welcome constructive feedback to improve our operations. We strive to be transparent by keeping stakeholders informed on Group-wide matters. Information channels include our annual sustainability reports (https://www.musimmas.com/sustainability-report/), website announcements (https://www.musimmas.com/newsroom/), and the RSPO Annual Communication of Progress. We make information on all grievances publicly available and maintain an active social media presence to engage with our stakeholders online. We also continuously engage with our stakeholders to support the identification and management of ESG topics, and their impacts, risks and opportunities. Moreover, we also collaborate with multiple stakeholders including the government, customers (i.e. Unilever), local NGOs, etc to assist in various landscape approaches, for example, the Aceh landscape (https://www.musimmas.com/aceh-report/).

Furthermore, Musim Mas participates in many public assessments and benchmarking programs including CDP, Ecovadis, SPOTT, and PROPER to rate and communicate our sustainability commitments and progress at the highest level. Musim Mas also conducts various third-party certifications such as RSPO, ISCC, POIG, etc ensuring not only that audits have been conducted independently but also proper implementation and compliance with the principles and criteria of the respective sustainability certification schemes. Our operations are audited and benchmarked annually against the principles and guidelines of respective certifications.

Impact of engagement, including measures of success
Certifications are an excellent way to demonstrate Musim Mas' progress to every actor along the supply chain. Certifications assure our customers and consumers that we honour our sustainability commitments and add value to the products that end up in consumers' hands. Moreover, our brand value is increased in line with the increase in sales of certified palm oil. In SPOTT 2021, we ranked 3rd out of 100 palm oil companies globally, rising from the 6th in the previous year. Moreover, we achieve a silver award in Ecovadis which improved from the bronze in the previous year.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Through the landscape approach and our commitment to our roadmap toward a responsible supply chain, including setting targets for supplier engagement and independent smallholders, below is our Landscape strategy for Aceh.

Aceh is home to five million Indonesians from over ten ethnic groups, and the Leuser Ecosystem, an ecological hotspot known for its biological diversity. The proximity to protected areas and ongoing deforestation alerts attest to Aceh's status as a high-risk landscape. As a company that strives to take the lead in sustainability, Musim Mas works to ensure that our NDPE policy is implemented. Leveraging on our business relationships as a bridge for engagement, we identified and prioritized districts where our third-party suppliers are located: Aceh Timur, Aceh Tamiang and Aceh Singkil. For this, Musim Mas collaborates with multiple stakeholders including IDH (the Sustainable Trade Initiative), the Government of Aceh, downstream actors (Unilever, PepsiCo), EQ, and suppliers, including those outside our supply chain to have the Aceh landscape verified as a sustainable, deforestation-free and traceable commodities producer.

The Aceh landscape covers 142 villages with 42,644 oil palm farmers in Aceh Singkil, Aceh Selatan, Subulussalam and Aceh Tamiang. Align with our sustainability policy, Musim Mas engages closely with third-party suppliers, independent smallholders and stakeholders in three priority areas — Aceh Tamiang, Subulussalam and Aceh Singkil — to address risks of encroachment into the Leuser Ecosystem, specifically in Aceh Tamiang and the South Aceh region. For this, Musim Mas collaborates with IDH (the Sustainable Trade Initiative), the Government of Aceh, Forum Konservasi Leuser (FKL), Pusat Unggulan Perkebunan Lestari (PUPL), downstream actors (Unilever, PepsiCo, General Mills, Nestle, AAK), local civil society organisations (Earthqualizer & Earthworm Foundation) and suppliers, including those outside our supply chain to have Aceh Tamiang verified as a deforestation-free and traceable commodities producer. As a part of the program, Smallholder Hub was established to help village extension officers to build the capacity to deliver training to independent smallholders in their area. Moreover, the initiative assists villages in developing land use plans via a participatory planning approach and assists in the planning and drafting of village policy in Aceh Singkil and the South Aceh district.

Musim Mas's Aceh strategy comprises of three main objectives. Firstly, the engagement objective entails outreach to smallholders and mills to convey NDPE requirements and the possible consequences of non-compliance through Suppliers Workshops and our Smallholders Hub Program. Topics such as NDPE Policy, Traceability to Plantation (TTP), Self-Assessment Tool (SAT) requirements, capacity building, Good Agricultural Practices (GAP), financial literacy and certification requirements are covered. Secondly, the Assurance objective has components to ensure that the mills supplying crude palm oil and palm kernels to Musim Mas are NDPE compliant. We will use the NDP Risk management framework to build on the Assurance component laid out in our Aceh Strategy. Finally, the Monitoring and Response objective contains proactive elements to detect and verify deforestation at the landscape or jurisdictional level. Methods used include deforestation monitoring platforms (i.e. RADD, EQs) and outreach programs to external stakeholders to collaborate and tackle issues on the ground. All three objectives have a stated set of measurable targets to indicate progress. For example, in 2021, all Aceh suppliers have participated in Musim Mas' supplier workshops with 100% of our suppliers in Aceh have since committed to our Musim Mas NDPE policy. Moreover, We trained 148 village agricultural officers and 547 independent smallholders across our two Smallholders Hubs. For more information, please refer to https://www.musimmas.com/aceh-report/ and https://www.musimmas.com/sustainability-report/.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

Yes, climate-related requirements are included in our supplier contracts

C12.2a

(C12.2a) Provide details of the climate-related requirements that suppliers have to meet as part of your organization's purchasing process and the compliance mechanisms in place.

Climate-related requirement

Complying with regulatory requirements

Description of this climate related requirement

Engaging with suppliers to adopt the standards comprising Musim Mas' NDPE commitments is at the forefront of our efforts. Because their progress will determine the success of our entire supply chain, we engage with all suppliers on our policy obligations and require them to i) attend our NDPE workshops, ii) submit NDPE commitments, iii) complete the Musim Mas Self-Assessment Tool (SAT). In case of complaints concerning breaches to our NDPE guidelines, Grievance Channels and Controlled Purchase Protocol (CPP) are available to resolve issues, secure remedy and remediation, and exclude errant suppliers as the last resort. If there is an allegation of NDPE violation across our supply chain, we will study the allegation through internal tools as well as publicly available tools such as satellite monitoring, GRAS, GFW, etc. If a breach of the NDPE policy is confirmed, we will engage with the relevant suppliers in question. Moreover, Musim Mas collaborates with Earthqualizer to monitor deforestation in all of our suppliers and own concessions with bi-weekly reports available. In 2021, there was no supplier excluded due to NDPE commitment breaches.

% suppliers by procurement spend that have to comply with this climate-related requirement

100

% suppliers by procurement spend in compliance with this climate-related requirement

100

Mechanisms for monitoring compliance with this climate-related requirement

Certification
Supplier self-assessment
Grievance mechanism/Whistleblowing hotline
Supplier scorecard or rating

Response to supplier non-compliance with this climate-related requirement

Retain and engage
Musim-Mas-Controlled-Purchase-Protocol.pdf

C-AC12.2/C-FB12.2/C-PF12.2

(C-AC12.2/C-FB12.2/C-PF12.2) Do you encourage your suppliers to undertake any agricultural or forest management practices with climate change mitigation and/or adaptation benefits?

Yes

C-AC12.2a/C-FB12.2a/C-PF12.2a

(C-AC12.2a/C-FB12.2a/C-PF12.2a) Specify which agricultural or forest management practices with climate change mitigation and/or adaptation benefits you encourage your suppliers to undertake and describe your role in the implementation of each practice.

Management practice reference number
MP1

Management practice
Knowledge sharing

Description of management practice
We frequently hold socialization with our FFB suppliers, in which we share our knowledge about good agricultural practices and environmental awareness.

Your role in the implementation
Knowledge sharing
Operational

Explanation of how you encourage implementation
We collect suppliers' data. These data will be used as a basis to effectively socialize with the suppliers to achieve a higher production rate and efficient usage of fertilizer. Using our own plantations as a case study, we share that it is not necessary to use higher usage (i.e. fuel, water, fertilizers, pesticides, etc.) as long as good agricultural practices are implemented. The reduction in these usages will directly result in lower direct cost, which would be favourable to our suppliers and environment. Method of engagement includes but are not limited to training and workshops on NDPE commitments as well as Musim Mas Self-Assessment Tool.

Climate change related benefit
Emissions reductions (mitigation)
Reduced demand for fossil fuel (adaptation)
Reduced demand for fertilizers (adaptation)
Reduced demand for pesticides (adaptation)

Comment
Reduction of agricultural inputs will directly translate to lower GHG emission.

Management practice reference number
MP2

Management practice
Diversifying farmer income

Description of management practice
We encourage our FFB suppliers to be RSPO and ISPO certified. RSPO certification could widen their market to reach big companies which require Sustainability Certification, such as RSPO. This could directly increase their income as RSPO certified FFBs has premium price.

Your role in the implementation
Procurement

Explanation of how you encourage implementation
Musim Mas fully supports and encourages our smallholders and third-party suppliers to pursue RSPO certification by providing Agri practices knowledge. As of 2021, we have socialized and trained more than 36,500 independent smallholders with 2,295 smallholders achieving RSPO certification. For more information on our smallholders' program, please refer to https://www.musimmas.com/smallholders/.

Climate change related benefit
Emissions reductions (mitigation)

Comment
RSPO requires its smallholder members to identify their emission hotspots and establish mitigation plans to reduce the impact of the identified hotspots.

C-AC12.2b/C-FB12.2b/C-PF12.2b

(C-AC12.2b/C-FB12.2b/C-PF12.2b) Do you collect information from your suppliers about the outcomes of any implemented agricultural/forest management practices you have encouraged?

Yes

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate
Yes, we engage directly with policy makers
Yes, we engage indirectly through trade associations

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?
No, but we plan to have one in the next two years

Attach commitment or position statement(s)
<Not Applicable>

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy
As a member of the HCSA, FFA, GAPKI, POIG, RSPO, ISPO, and ISCC, Musim Mas is extensively involved with the latest climate-related issues and standards in the palm oil sector. As such, Musim Mas has been actively involved in the RSPO over the years, co-chaired the Biodiversity and HCV working group, the Compensation task force, and previously represented Growers from the Pacific at the Board. Moreover, we are part of the High Carbon Stock Approach Executive Committee. In turn, this extensive engagement and involvement have shaped our sustainability policy to the highest standards. Accordingly, sustainability achievements such as full and beyond compliance with international certification schemes including RSPO, ISCC, POIG, ISPO, and ITSNC principles and guidelines have been fully maintained and recently ranked 3rd out of 100 global palm oil companies in SPOTT 2021.

Primary reason for not engaging in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate
<Not Applicable>

Explain why your organization does not engage in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate
<Not Applicable>

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate
Verification and audits

Specify the policy, law, or regulation on which your organization is engaging with policy makers
Indonesian Sustainable Palm Oil (ISPO)

Policy, law, or regulation geographic coverage
National

Country/region the policy, law, or regulation applies to
Indonesia

Your organization's position on the policy, law, or regulation
Support with no exceptions

Description of engagement with policy makers
We engage with the Indonesian Government and the Indonesian Sustainable Palm Oil (ISPO) GHG Working Group to develop GHG emission calculation tool and implement it on the upstream level. We support the continuation of the methodology for calculating GHG emissions to contribute more to the environment.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation
<Not Applicable>

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

C12.3b

(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association
Other, please specify (Rountable on Sustainable Palm Oil (RSPO), Gabungan Pengusaha Kelapa Sawit Indonesia (GAPKI), Gabungan Industri Minyak Nabati Indonesia (GIMNI))

Is your organization's position on climate change consistent with theirs?
Consistent

Has your organization influenced, or is your organization attempting to influence their position?
We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)
Musim Mas as well as the trade association strive to promote sustainable practices and implementation for all stakeholders as well as promote sustainable palm oil. Musim Mas is also involved and places its staff in the RSPO working group to assist in shaping RSPO policy. For example, Musim Mas was picked to be part of the RSPO PnC standard review task force in 2018. Through this task force, Musim Mas brainstormed with other leaders in the sector to improve the current sustainability standards.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)
0

Describe the aim of your organization's funding
<Not Applicable>

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

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).

Publication
In voluntary sustainability report

Status
Underway – previous year attached

Attach the document
y
Musim-Mas-Sustainability-Report-2020.pdf
Musim-Mas-Sustainability-Report-2020.pdf

Page/Section reference
Sustainability Approach (pg 14-16), Governance (pg 17), Certification and Verification (pg 17), Environmental Impact (pg 35-37), Carbon Footprint and Energy (pg 38-39), Stakeholder Collaboration (pg 43-44), Supply Chain (pg 45-49)

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment
Musim Mas annually published our sustainability report. The upcoming 2021 Sustainability Report has not been published at the time of CDP submission.

C13. Other land management impacts

C-AC13.1/C-FB13.1/C-PF13.1

(C-AC13.1/C-FB13.1/C-PF13.1) Do you know if any of the management practices implemented on your own land disclosed in C-AC4.4a/C-FB4.4a/C-PF4.4a have other impacts besides climate change mitigation/adaptation?
Yes

C-AC13.1a/C-FB13.1a/C-PF13.1a

(C-AC13.1a/C-FB13.1a/C-PF13.1a) Provide details on those management practices that have other impacts besides climate change mitigation/adaptation and on your management response.

Management practice reference number
MP1

Overall effect
Positive

Which of the following has been impacted?
Biodiversity

Description of impact
We have established high conservation value (HCV) areas to protect and preserve biodiversity and as a part of the certification processes. The establishment of HCV area imparts a positive impact on the biodiversity of the area compared to areas without HCV. As of 2021, approximately 28,000 hectares have been set aside for conservation in our own operations and more than 9 million hectares are monitored daily covering most of our supplier's concessions. Through these monitoring systems, if our supplier is found to be noncompliant with the NDPE policy, we will engage with the supplier in question and implement our Controlled Purchase Protocol (CPP). In 2021, no supplier was excluded due to NDPE commitment breaches.

Have you implemented any response(s) to these impacts?
Yes

Description of the response(s)
Following our sustainability policy, Musim Mas's commitment to conserve and preserve both biodiversity and the environment has been long-standing and will only continue to become our utmost priorities. As a member of the Palm Oil Innovation Group (POIG), the Roundtable on Sustainable Palm Oil (RSPO), Indonesian Sustainability Palm Oil (ISPO), and International Sustainability and Carbon Certification (ISCC), Musim Mas pledge to No Deforestation of High Carbon Stock (HCS) forests, No Conversion of High Conservation Value (HCV) areas, No Developments on Peatlands regardless of depth, and No Burning policy. Through combination methods such as the Earthqualizer platform, RADD partnership, ground-truthing, and satellite, we monitor more than 9 million hectares. Furthermore, we also monitor hotspots and extreme weather on daily basis using data obtained from NOAA, MODIS and VIIRS to mitigate fire risk and floods in our concession and surroundings. For more information, please refer to https://www.musimmas.com/sustainability/environmental-protection/.

Management practice reference number
MP2

Overall effect
Positive

Which of the following has been impacted?
Water

Description of impact
Our usage of N-fertilizer is decreased due to usage of organic fertilizer substitute. Therefore, this would reduce the eutrophication impact.

Have you implemented any response(s) to these impacts?
Yes

Description of the response(s)
In all plantation and mill processes, we implement the '4Rs' to manage waste: reduce, reuse, recycle, and recover. At our plantations, old palm tree fronds and trunks are mulched and applied as organic fertilizer. Additionally, dried decanter solids and boiler ash are applied at plantations as organic fertilizer and POME is treated and applied to land as irrigation.

Management practice reference number
MP3

Overall effect
Positive

Which of the following has been impacted?
Soil

Description of impact
The implementation of Integrated Pest Management (IPM) to reduce reliance on pesticides and herbicides, thus, contributes to a lower soil ecotoxicity.

Have you implemented any response(s) to these impacts?
Yes

Description of the response(s)
We track the use of pesticides at our estates and monitor toxicity levels. We have found that our current range of 400 -600 toxicity units per hectare is closely aligned with best practices in the palm oil industry.

C-AC13.2/C-FB13.2/C-PF13.2

(C-AC13.2/C-FB13.2/C-PF13.2) Do you know if any of the management practices mentioned in C-AC12.2a/C-FB12.2a/C-PF12.2a that were implemented by your suppliers have other impacts besides climate change mitigation/adaptation?
Yes

C-AC13.2a/C-FB13.2a/C-PF13.2a

(C-AC13.2a/C-FB13.2a/C-PF13.2a) Provide details of those management practices implemented by your suppliers that have other impacts besides climate change mitigation/adaptation.

Management practice reference number
MP1

Overall effect
Positive

Which of the following has been impacted?
Soil
Water

Description of impacts
Through sharing knowledge of best Agriculture practices, our suppliers become more efficient in the usage of fertilizer, pesticides, etc. The reduction in both fertilizers and pesticides would not only lower the eutrophication and ecotoxicity impact but also be financially beneficial to our suppliers.

Have any response to these impacts been implemented?
Yes

Description of the response(s)
We are collecting suppliers' usage data. These data will be used as a basis to effectively socialise toward suppliers to achieve higher production rates, efficient usage of fertilizer, etc. Using our own plantations as a case study, we share that it is not necessary to use higher usage (i.e. fuel, water, fertilisers, pesticides, etc.) as long as good agricultural practices are implemented. The reduction in these usages will directly result in lower direct cost, which would be favourable by our suppliers. Method of engagement includes but is not limited to training and workshops on NDPE commitments, Musim Mas Self-Assessment Tool. For more information, please refer to https://www.musimmas.com/sustainability/third-party-suppliers/.

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity	Scope of board-level oversight
Row 1	Yes, both board-level oversight and executive management-level responsibility	The board, senior management, and relevant sustainability teams meet quarterly to assess and review key ESG issues including overseeing and monitoring climate-related risks and opportunities such as deforestation, landscape restoration, conservation, biodiversity, and wildlife protection. In 2020, our board approved the collaboration with the South East Asia Rainforest Research Partnership (SEARRP), a Borneo-based scientific research facility, to quantify our conservation efforts and review our management and monitoring plans. Collaborate with SEARRP to review and improve biodiversity monitoring methodology. For more information on the collaboration, please refer to https://www.musimmas.com/how-can-we-support-biodiversity-in-oil-palm-landscapes/.	<Not Applicable>

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity	Biodiversity-related public commitments	Initiatives endorsed
Row 1	Yes, we have made public commitments and publicly endorsed initiatives related to biodiversity	Commitment to not explore or develop in legally designated protected areas Commitment to respect legally designated protected areas Commitment to avoidance of negative impacts on threatened and protected species Commitment to no conversion of High Conservation Value areas Commitment to secure Free, Prior and Informed Consent (FPIC) of Indigenous Peoples Commitment to no trade of CITES listed species	SDG

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?	Portfolio
Row 1	Yes, we assess impacts on biodiversity in both our upstream and downstream value chain	<Not Applicable>

C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Land/water management Species management Education & awareness Law & policy Livelihood, economic & other incentives

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	Yes, we use indicators	State and benefit indicators Response indicators

C15.6

(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments Governance Impacts on biodiversity Biodiversity strategy	Content of biodiversity-related policies or commitments: Sustainability Policy Governance: page 17 SR 2020 Impacts on biodiversity: page 35-41 SR 2020 Biodiversity strategy: page 5 SR 2020

C16. 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.

n/a

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Director of Sustainability	Director on board

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Dear Customers,

Please refer to our website (www.musimmas.com) for latest update of our business. Most the information requested in supply chain module are available in our Sustainability Report, Sustainability Policy, Sustainability Journal, and many different sections on our website that can be accessed publicly. We herewith encourage you to check our website to get latest information and updates on business and development.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	10000000000

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

n/a

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	We are in the progress to conduct Life Cycle Analysis (LCA) study up to downstream operations to meet customers' inquiries.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?
Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

We would need to engage our customers and obtain necessary information on their business and product lines.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?
Yes

SC2.2a

(SC2.2a) Specify the requesting member(s) that have driven organizational-level emissions reduction initiatives, and provide information on the initiatives.

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?
No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms