PT Musim Mas - Climate Change 2020

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 2019	December 31 2019	No	<Not Applicable>

C0.3

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

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

Other, please specify (Wide application of palm oil and its derivatives)

Please explain

Palm Oil and its derivatives have wide application of use, which render difficulty in tracing the final use, waste disposal and end of life treatment.

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

Our business activities run the gamut of the palm oil supply chain: o Managing oil palm plantations to produce fresh fruit bunch (FFB) 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

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 is led by our Executive Chairman and Chief Executive Officer. Our sustainability teams, senior management and the Board, are involved in decision-making pertaining to our climate-related risks and opportunities.

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>	Climate change, sustainability and GHG emission reductions are important to Musim Mas. These issues are integrated into Musim Mas business strategy and daily operations. These issues are frequently discussed and was set as an agenda through a Quarterly Meeting. Quarterly meeting is a discussion platform among the Board, Directors and Head of Departments to discuss all the progression of ongoing project and matters, including climate change, sustainability and GHG emission reduction issues. This including reviewing and guiding strategy, major plans of action, risk management policies, annual budgets, business plans and so on. Director of Sustainability together with the other Sustainability Team will brief the board on all the sustainability issues on environment as well as social, including the climate-related issues and GHG emissions reduction. After that the results of discussions and action plan will be shared and communicated to all relevant departments so the message can be conveyed to all layers of workers.

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
Sustainability committee	<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).

i.) Where in the organizational structure the committee lies

It is a combination of management level from various departments within Musim Mas such as Sustainability department, Strategy and Planning department, Estate department, Processing department, Corporate General Affair Department, Corporate Communication Department, Production Planning and Inventory Control Department, Corporate Safety Health Environment and Quality - Development and Implementation Department, Sustainabble Supply Chain Department. The committee frequently report to the President Director regarding sustainability, climate and GHG emission reduction issues.

ii.) A rationale of why responsibilities for climate-related issues have been assigned to this committee

Musim Mas has adopted several sustainability certification and verification schemes, such as Roundtable Sustainable Palm Oil (RSPO), International Sustainability & Carbon Certification (ISCC), Palm Oil Innovation Group (POIG), Indonesian Sustainable Palm Oil (ISPO), Italian National Sustainability Certification System (ITSNC / INS) and etcetera. All those schemes focus on the climate-related issues and sustainable practice. The Sustainability committee is a combination of various departments along the supply chain who are responsible to monitor the development regarding sustainability and climate issues, assess any risks and opportunities and implement and manage sustainability and climate programs as well as maintain conformity with 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	

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 inventivized	Comment
All employees	Monetary reward	Emissions reduction project	In current business environment, proper climate change management is integral to the performance of the company. Musim Mas awares that the vision and mission on Sustainability must be shared and conveyed to all level of staffs so all staffs can share the same goals with the company and take part on the realization process. Monetary incentives are awarded based on performance. In addition, Musim Mas encourages staffs to come up with an improvement idea and submit a project to reduce emissions for daily operation to be reviewed and considered by the management level. Management level will deliberate with board level on the idea and project submitted by the staff. In return, the staff will be rewarded monetarily (cash, holiday trip, electronics).
Other, please specify (Raw Material Suppliers)	Monetary reward	Environmental criteria included in purchases	In current business environment, proper climate change management is integral to the performance of the company. Musim Mas is aware that the vision and mission on Sustainability must be shared and conveyed to all stakeholders including our raw material suppliers i.e. smallholders or small farmers supplying raw material for our production. We encourage and engage small farmers, educating them on Sustainable Practices in order to reduce the risk of climate change. We help and facilitate our scheme smallholders to obtain Sustainability Certification and Verification and is thus directly linked to their earning. For example : a sustainability certified raw material would have better price in the market nowadays, rather than those raw material without sustainability certificate. When the farmers receive more earnings they have more access to better education for their children, better access to health
All employees	Monetary reward	Company performance against a climate-related sustainability index	In current business environment, proper climate change management is integral to the performance of the company and is thus indirectly linked to the size of the annual bonus that is distributed to the employees. For example, NDPE market is emerging these days and many customers are operating in such market demanding producers to follow standards of Sustainability. There is an increasing demand for the suppliers that are comply with NDPE policy, which enable the production of sustainable and low emission products, which generate more revenue for the company, which indirectly has positive impact on employees' income.

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	
Medium-term	3	10	
Long-term	10	20	

C2.1b

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

Musim Mas defines substantive financial impact as:

- Any impact which 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 affect our production cost as well as production volume.

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

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
The palm oil sector is linked to different sustainability challenges and had come under scrutiny in the past few years. In view of that, we have developed a mechanism to keep abreast of the new developments regarding sustainability in the oil palm industry. The approach to identify and assessed risk are as follow: - The sustainability committee which comprises of various departments is to collect and obtain all relevant news and information from external as well as internal such as climate related topics, environmental topics, social topics, emission reduction topics and the overall sustainability topics. All relevant informations will be shared and discussed with related departments to eventually come up with necessary action plans, recommendations and decisions and reported to the board level. - The sustainability committee is to conduct risk analysis at asset level based on our Sustainability Policy and all Certification and Verification Standards relevant for the respective asset. All relevant informations will be shared and discussed with related departments to eventually come up with necessary action plans, recommendations and decisions and reported to the board level. - At asset level, the risk is identified and assessed using developed checklist. The asset level management will report to senior management to be processed further at the Sustainability committee.

Value chain stage(s) covered
Upstream

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
In 2014, we published our Sustainability Policy. This policy is shared with all of our FFB suppliers candidate through socialization prior to any business agreements. In addition to that, we also conduct a thorough check on their land legalities and status, planting history and etc to determine if the FFB come from conflict-free land. We would only choose suppliers that share our vision toward sustainability. However, we would not just leave the third parties which do not align with our policy with no awareness regarding these policies and instead, we will re-socialize and strongly encourage them to apply the same policies to themselves. Following that, we also share knowledge of good agricultural practices, namely responsible usage of chemicals inputs, such as fertilizers and pesticides to minimize any excess runoff of nutrients to water bodies which could potentially result in eutrophication and acidification. Their chemical inputs are frequently monitored to ensure optimal usage is achieved. Application of good agricultural practices will not only beneficial to the environment, but also to themselves as lower chemical input directly relates to reduced direct cost.

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	We and all our suppliers must comply with applicable national and/or local laws and regulations especially those related but not limited to labour, health and safety, natural environment and local communities. Regulation is relevant for us and will always included and considered for climate-related risk assessments. E.g.: Peraturan Menteri Pertanian Republik Indonesian Nomor 11/Permentan/OT.140/3/2015 is relevant for us and is included and considered for climate-related risk assessments.
Emerging regulation	Relevant, always included	There are risks in changes in regulation which we constantly monitor and consider in the risk assessment. E.g: The emerging ISCC regulation that adopts EU RED II might forced us to further reduce our GHG emission.
Technology	Relevant, always included	There are risks in the relatively new technology which we have implemented to tackle climate change may fail (for example: methane capture technology). This risk is always included in our risk assessment.
Legal	Relevant, always included	Legal is an important aspect in our business and operations. We must comply with the relevant legal in the country we are operating. Legal is relevant for us and will always included and considered for climate-related risk assessments.
Market	Relevant, always included	The ever changing market and public opinion driven by NGO's campaign poses a risk to our business. This is always included in our risk assessment. E.g.: Market demand on eco-friendly products leads us to participate in several Sustainability Certification adn Verification schemes, such as RSPO, ISCC and POIG.
Reputation	Relevant, always included	There are risks that we may be targeted by an NGO campaign and take reputational hit. This risk is always included in our risk assessment.
Acute physical	Relevant, always included	Acute physical risks such as extreme drought and flood can greatly reduce oil palm yield. This risk is always included in our risk assessment.
Chronic physical	Relevant, always included	Chronic physical risks for example: increased temperature may cause disruption in oil palm production. This risk is always included in our risk assessment.

C2.3

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

C2.3a

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

Identifier
Risk 1

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

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

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
Increased severity of extreme weather events such as prolonged drought and flooding may reduce oil palm yield. Some study showed that 10-30% drop in production can be expected. This will decrease our production and revenue.

Time horizon
Long-term

Likelihood
About as likely as not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
Reduced revenue from reduced production can be significant. Reduction in production can be expected due to drought and flooding.

Cost of response to risk

Description of response and explanation of cost calculation
The company has been implementing best management practices to alleviate the impact of drought and flood such as: 1. Improve soil management by recycling back cut fronds and organic waste from palm oil mill such as EFB and decanter to improve the soil moisture retention capacity and to ameliorate the drought effects. 2. Install and maintain proper drainage to better deal with flood waters. 3. Research drought or flood resistant varieties of oil palm. These activities have been implemented since a few years ago and are expected to continue in the future. They are expected to help the company to better deal with drought and flooding condition. Improved moisture retention due to biomass application help provide buffer for the palms during drought while the improved drainage will help to reduce the incidence and severity of flooding during wet months.

Comment

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Enhanced emissions-reporting obligations

Primary potential financial impact
Increased indirect (operating) costs

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

Company-specific description
GHG emission calculation and reporting is becoming integral to the sustainability appraisal of a company. In our case, we have to calculate the GHG emissions of our upstream operations to comply with various sustainability certifications such as POIG, RSPO, ISCC, ISPO, Italian National Standard (INS) etc. It it expected that more emission reporting will be required in the future for example: Singapore in 2017 required GHG emission calculation and reporting for all sites which emitted more than 25,000 tCO2 per year. Other countries (such as Indonesia and Malaysia) which currently do not have this requirement may follow suit. This means more resources need to be allocated to calculate and report GHG emission.

Time horizon
Short-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
Increased operational cost because more resources need to be allocated to calculate and report GHG emission. There is also risk that some of our supplier may not be able to comply with the requirement and we have to find a new supplier.

Cost of response to risk

Description of response and explanation of cost calculation
- Establish a standardized GHG data collection system - Provide training to staffs on GHG calculation methods - Engage with suppliers and provide training to them on GHG calculation methods

Comment

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Market	Changing customer behavior

Primary potential financial impact
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
Changes in consumer preferences in the future may affect the sale of our main products: palm oil and its derivatives. There is an ongoing campaign in Europe which aim to reduce and ultimately displace the use of palm oil. On the other hand there is a more benign campaign to promote the use of sustainable and certified palm oil instead of displacing palm oil entirely. The impact on our business will vary depending on the outcome of those campaigns.

Time horizon
Short-term

Likelihood
More likely than not

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
Financial impact of the changing consumer behavior can range from relatively mild to severe. If the European consumer shift to demanding sustainable and certified palm oil, the impact will be milder than if the consumer reject palm oil entirely. In the former, the financial impact will be limited to the certification cost (and the cost of change in operation to comply with certifications) and supplier engagement cost. In the latter, the financial impact will be severe due to the loss of our major market.

Cost of response to risk

Description of response and explanation of cost calculation
- Engage in positive palm oil campaign - Certification of our operations - Engagement with suppliers to push them to certify their operations - Explore new market opportunities

Comment

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 through access to new and emerging markets

Company-specific description
Changes in renewable regulations may result in an opportunity to create a niche and better premium for products that has the lowest emission. Our company has installed various emission reduction technologies and is in a good position to exploit it.

Time horizon
Short-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
Increased revenue from sale of premium low emission palm oil products

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
- Install GHG emission reduction technologies such as methane capture - Obtain the necessary certification

Comment

Identifier
Opp2

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

Opportunity type
Markets

Primary climate-related opportunity driver
Other, please specify (Better company reputation)

Primary potential financial impact
Increased revenues resulting from increased demand for products and services

Company-specific description
Climate change has created more awareness among the stakeholders as well in relation to palm oil which can reflect in different ways on the industry. However, there is also an opportunity to establish the reputation of Musim Mas as a supplier of certified sustainable palm oils and palm products.

Time horizon
Short-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
Better sales environment and potential premiums for sustainable and low emission products will increase revenue and profit

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
- Create and implement Musim Mas Sustainability Policy. - Publicize the progress of the implementation of Musim Mas Sustainability Policy (for example: through Musim Mas website, Musim Mas Sustainability report following GRI Standard etc). - Raise the profie of Musim Mas as sustainable supplier in the public (for example: reporting through CDP, publish Musim Mas Sustainability report following GRI Standard etc). - Adopt various sustainability certification and verification schemes, such as RSPO, ISCC, POIG and ISPO.

Comment

Identifier
Opp3

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

Opportunity type
Products and services

Primary climate-related opportunity driver
Development of climate adaptation, resilience and insurance risk solutions

Primary potential financial impact
Increased revenues resulting from increased production capacity

Company-specific description
Climate change may cause a change in precipitation pattern resulting in previously dry area to become wet area. The increase in moisture level could enable planting of oil palm where soils and other conditions are suitable. This provides opportunity for expansion of oil palm into these new areas.

Time horizon
Long-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

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

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

Explanation of financial impact figure
More production and revenue from expansion in new area

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
Engaging with government to build land bank in area which is showing a trend in precipitation increase

Comment

C3. Business Strategy

C3.1

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

Yes

C3.1a

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

No, but we anticipate using qualitative and/or quantitative analysis in the next two years

C3.1c

(C3.1c) Why does your organization not use climate-related scenario analysis to inform its strategy?

We are not familiar with climate-related scenario analysis. Once we have studied it and other available options, we may implement one in the future.

C3.1d

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Changes in customer preference into environmental friendly products has lead us to participate in several Sustainability Certification and Verification schemes, such as RSPO, ISCC, POIG, ISPO and so on. This has also led us to publication of our own Sustainability Policy in 2014.
Supply chain and/or value chain	Yes	The focus on deforestation by palm oil expansion in past recent years has lead us to develop a mechanism to select only Fresh Fruit Bunches (FFB) that come from smallholders which share our vision in our Sustainability Policy.
Investment in R&D	Yes	In order to achieve a low emission goods and reduce our environmental impacts, our R&D team has developed optimal agriculture practices, including usage of optimal fertilizers amount in order to reduce environmental impacts, such as climate change and eutrophication. In addition, we have implemented Integrated Pest Management (IPM), in which we use barn owls to reduce rats population. This procedure is expected to reduce the usage of rodenticides.
Operations	Yes	We have implemented several emission reduction activites to ensure our target towards lower emission achieved, namely methane capture installation, no new planting on high carbon stock area and peatland, shifting fossil fuel usage to biofuel, etc.

C3.1e

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets Liabilities	The demand for sustainable-certified products has propelled us to keep on improving our environmental performance. The budget to improve our environmental performance is always considered in our financial budget.

C3.1f

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

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

Target reference number
Int 1

Year target was set
2016

Target coverage
Business activity

Scope(s) (or Scope 3 category)
Other, please specify (Life Cycle Analysis (product-based emission analysis))

Intensity metric
Metric tons CO2e per unit of production

Base year
2006

Intensity figure in base year (metric tons CO2e per unit of activity)
5.96

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure
100

Target year
2025

Targeted reduction from base year (%)
55

Intensity figure in target year (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 (metric tons CO2e per unit of activity)
2.8

% of target achieved [auto-calculated]
96.4002440512508

Target status in reporting year
Underway

Is this a science-based target?
No, and we do not anticipate setting one in the next 2 years

Please explain (including target coverage)
Musim Mas Group is committed to Palm Oil Innovation (POIG) Charter which requires GHG emission enumeration, reduction and setting of a reduction target. The GHG emission analysis is conducted using Roundtable Sustainable Palm Oil (RSPO) PalmGHG calculator, which is a life cycle analysis (LCA)-based calculator. The analysis was conducted for twelve Musim Mas Group RSPO certified mills. Musim Mas has set a group emission reduction target of 55% in 2025 compared to baseline year, 2006. In 2018, Musim Mas has achieved 53% reduction compared to 2006. This decline in emission intensity is the culmination of our emission reduction activities, such as cessation of new planting on peat and high carbon stock area, installation of methane capture, shift fossil fuel usage to biofuel, integrated pest management practices to reduce pesticide usage. Moreover, Musim Mas also strive to keep improving the oil yield to further lower the emission intensity. Due to current pandemic, we are yet to complete our GHG quantification for current reporting year. Therefore, 2018 figure is disclosed.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?
No other climate-related targets

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		
To be implemented*		
Implementation commenced*		
Implemented*	15	650517.74
Not to be implemented		

C4.3b

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

Initiative category & Initiative type

Fugitive emissions reductions	Agricultural methane capture

Estimated annual CO2e savings (metric tonnes CO2e)
650517.74

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
8000000

Investment required (unit currency – as specified in C0.4)
45000000

Payback period
4-10 years

Estimated lifetime of the initiative
21-30 years

Comment
Palm Oil Mill Effluent (POME) is the main liquid waste of the milling process. It has very high concentration of Biological Oxygen Demand (BOD), chemical oxygen demand (COD) and various solids which make it undesirable and illegal to dispose without proper treatment. POME is conventionally treated in large open lagoons which rely on anaerobic bacteria to break down the organic matters in the wastewater. POME is the main source of emission in the mill operation, contributing up to 95% of the total mill emission as this process releases a huge amount of biogenic methane, a greenhouse gas that is 22.25 times more potent than carbon dioxide (Gan et al, 2018; IPCC, 2007). In order to overcome the large emission of POME, Musim Mas has installed methane captures to reduce the emission from mill operation by capturing the methane from POME. In 2019, this process had saved 551,002.40 tCO2e of GHG emission. Moreover, the methane captured can be utilized as gas engine feed to generate electricity. The electricity generated will then be sent to workers' housing and national grid. The electricity generation will provide emission credit that will further reduce emission of mill operation. In 2019, Musim Mas generated 122,981,430.62 kWh of electricity from methane captures installed in palm oil mills. This is equivalent to avoidance of 99,515.34 tCO2e if the same amount of electricity was to be generated by national grid.

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	Musim Mas provide a dedicated budget for emission reduction activities such as methane capture from palm oil mill effluent (POME)

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
A land use planning following Sustainability Policy and all sustainability schemes adopted by Musim Mas are conducted before any new planting to identify land with high conservation value, high carbon stock and riparian areas which will be set aside.

Primary climate change-related benefit
Emission reductions (mitigation)

Estimated CO2e savings (metric tons CO2e)
48111

Please explain
Figure is quantified using land carbon stock default value provided by RSPO.

Management practice reference number
MP2

Management practice
Fertilizer management

Description of management practice
Side products from our own processing process, such as boiler ash, dry decanter solid and treated POME, are used as organic fertilizers in our plantations. These side products contain N and P content, which can be used to substitute N-fertilizers and P-fertilizers.

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

Estimated CO2e savings (metric tons CO2e)
2.35

Please explain
Figure is quantified using fertilizer emission factors provided by ISCC 205.

Management practice reference number
MP3

Management practice
Integrated pest management

Description of management practice
Several integrated pest management practices are applied to reduce the use of synthetic pesticides. 1. Barn owl program to control the rat populations 2. Planting 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)

Please explain

C4.5

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

C4.5a

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

Level of aggregation
Group of products

Description of product/Group of products
Palm oil and its derivatives such as crude palm oil (CPO), refined bleached and deodorized palm oil (RBDPO), and Palm methyl ester (PME).

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

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions
Other, please specify (RSPO and ISCC)

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

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
We produced and sold RSPO and ISCC certified CPO, RBDPO and PME to customers that require them.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start
January 1 2016

Base year end
December 31 2016

Base year emissions (metric tons CO2e)
1119103

Comment

Scope 2 (location-based)

Base year start
January 1 2016

Base year end
December 31 2016

Base year emissions (metric tons CO2e)
212393

Comment

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.2

(C5.2) 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

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)
1337533

Start date
<Not Applicable>

End date
<Not Applicable>

Comment

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

C6.3

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

Reporting year

Scope 2, location-based
320178

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

Start date
<Not Applicable>

End date
<Not Applicable>

Comment

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?
No

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

Metric tonnes 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

Evaluation status
Not relevant, explanation provided

Metric tonnes 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 last for decades. As such, 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

Metric tonnes 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

Upstream transportation and distribution

Evaluation status
Relevant, not yet calculated

Metric tonnes 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

Waste generated in operations

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Most of the waste and residue generated in the operations are either treated within operation boundaries (thus included in scope 1 emission) or reused and recycled.

Business travel

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Scope 3 emission from business travel is relatively small and thus is not relevant

Employee commuting

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Scope 3 emission from employee commuting is relatively small and thus is not relevant

Upstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes 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 do not have any upstream leased assets.

Downstream transportation and distribution

Evaluation status
Relevant, not yet calculated

Metric tonnes 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

Processing of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Processing of sold product emission is calculated by our customers and is included in their GHG emission

Use of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Our products are biogenic and thus do not have any fossil CO2 emission.

End of life treatment of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes 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
Our end products are palm oil and its derivative which are perishable products which do not require end of life treatment.

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes 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 do not have any downstream leased assets

Franchises

Evaluation status
Not relevant, explanation provided

Metric tonnes 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 do not have any franchising system

Investments

Evaluation status
Relevant, not yet calculated

Metric tonnes 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

Other (upstream)

Evaluation status
Not evaluated

Metric tonnes 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

Other (downstream)

Evaluation status
Not evaluated

Metric tonnes 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

C-AC6.6/C-FB6.6/C-PF6.6

(C-AC6.6/C-FB6.6/C-PF6.6) Can you break down your Scope 3 emissions by relevant business activity area?
No

C-AC6.6b/C-FB6.6b/C-PF6.6b

(C-AC6.6b/C-FB6.6b/C-PF6.6b) Why can you not report your Scope 3 emissions by business activity area?

Row 1

Primary reason
We are planning to include in the next two years

Please explain
We are currently deepen our understanding on how to calculate Scope 3 emissions. Once we come out with refined data, we would report it.

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)
1961496

Methodology
Default emissions factors

Please explain
Emission from oxidation of peat calculated by using default emission factor provided by IPCC Guidelines for National Greenhouse Gas Inventories, Vol 4: Agriculture, Forestry and Other Land Use.

CO2 removals from land use management

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain

Sequestration during land use change

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain

CO2 emissions from biofuel combustion (land machinery)

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain
We do not use biofuel in our land machinery

CO2 emissions from biofuel combustion (processing/manufacturing machinery)

Emissions (metric tons CO2)
2358543

Methodology
Default emissions factors

Please explain
Calculated using GHG protocol stationary emission calculator

CO2 emissions from biofuel combustion (other)

Emissions (metric tons CO2)
0

Methodology
Default emissions factors

Please explain

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
This is similar to the data in 6.1 and 6.3 as all of our emission is related to growing, 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)
1657711

Denominator: unit of production
<Not Applicable>

Change from last reporting year
About the same

Please explain
The emissions are quantified using calculator provided by 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
0.14

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
1657711

Metric denominator
metric ton of product

Metric denominator: Unit total
11467340

Scope 2 figure used
Location-based

% change from previous year
6.89

Direction of change
Increased

Reason for change
A slight increase in downstream processing emission.

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
N2O	357931	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Indonesia	1135462
Malaysia	18140
China	185
India	38455
Spain	81222
Netherlands	5819
Italy	12485
Viet Nam	2636
Singapore	43127

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)
Plantation	368038
Palm oil mills, ramps and jetties	54476
Refineries and oleochemicals	817934
Offices	13625
Shipping	83460

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.

Total emissions

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
<Not Applicable>

Emissions (metric tons CO2e)
368038

Methodology
Default emissions factor

Please explain
Calculated using default values and calculation method from RSPO, ISCC and GHG Protocol. This figure covers all of our plantation operation.

Activity
Processing/Manufacturing

Emissions category
<Not Applicable>

Emissions (metric tons CO2e)
872410

Methodology
Default emissions factor

Please explain
Calculated using default values and calculation method from GHG Protocol. This is emission from our palm oil mills, refineries, oleochemical plants etc.

Activity
Distribution

Emissions category
<Not Applicable>

Emissions (metric tons CO2e)
97085

Methodology
Default emissions factor

Please explain
Calculated using default values and calculation method from GHG Protocol. This figure is emissions from our trading offices and transports such as trucks, ships etc.

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)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Indonesia	272249	0	336442	0
Malaysia	9426	0	14039	0
China	2365	0	3572	0
India	12084	0	13048	0
Germany	12	0	26	0
Italy	2862	0	7433	0
Singapore	88	0	187	0
United Kingdom of Great Britain and Northern Ireland	4	0	8	0
United States of America	59	0	71	0
Spain	14921	0	48857	0
Netherlands	4966	0	11269	0
Viet Nam	1142	0	3252	0
Brazil	0	0	0	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)
Plantations	0	0
Palm oil mills, ramps, and jetties	105	0
Refineries and oleochemicals	319276	0
Offices	698	0
Shipping	99	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?

Remained the same overall

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	66886	Increased	4.27	The emission increase due to higher fossil fuel usage in current reporting year. The figure is obtained by following the formula provided by the guidance, which equals to 4.27% increase compared to last reporting year: (66,886/1,566,776)*100%=4.27%.
Other emissions reduction activities		<Not Applicable>		
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output	17043	Decreased	1.09	The emission decrease is due to slight decrease in output production. The figure is obtained by following the formula provided by the guidance, which equals to 1.09% increase compared to last reporting year: (17,043/1,566,776)*100%=1.09%.
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
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 0% but less than or equal to 5%

C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	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)	9155048	5286242	14441290
Consumption of purchased or acquired electricity	<Not Applicable>	0	464069	464069
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>	9155048	5750311	14905359

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	No
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)
Lignite Coal

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2918169

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
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
2918169

Emission factor
1.21

Unit
metric tons CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Diesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
394915

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
185718

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
209197

Emission factor
2.69

Unit
kg CO2e per liter

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Fuel Oil Number 6

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
196412

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
10921

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
185490

Emission factor
3.14

Unit
metric tons CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Petrol

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
20342

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
323

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
20019

Emission factor
2.27

Unit
kg CO2e per liter

Emissions factor source
GHG Protocol for mobile combustion version 2.0

Comment

Fuels (excluding feedstocks)
Natural Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
1756403

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
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
1756403

Emission factor
1.89

Unit
kg CO2e per m3

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Biodiesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
53182

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
20261

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
32921

Emission factor
1.92

Unit
metric tons CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Agricultural Waste

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
8100842

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
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
8100842

Emission factor
1.18

Unit
metric tons CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Biogas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
1000860

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
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
1000860

Emission factor
2.48

Unit
metric tons CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

Fuels (excluding feedstocks)
Charcoal

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
163.76

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
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
163.76

Emission factor
3.5

Unit
kg CO2e per metric ton

Emissions factor source
GHG Protocol for stationary combustion version 4.1

Comment

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	4971530	4848549	3197176	3074195
Heat	236919	236919	20261	20261
Steam	7102185	7102185	4567394	4567394
Cooling	2130656	2130656	1370218	1370218

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 third-party verification or assurance

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	Year on year emissions intensity figure	POIG	Our GHG emission reduction target has been verified and monitored annually by POIG.

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, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?
No

C11.3

(C11.3) Does your organization use an internal price on carbon?
No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?
Yes, our suppliers

C12.1a

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

Type of engagement
Compliance & onboarding

Details of engagement
Included climate change in supplier selection / management mechanism
Code of conduct featuring climate change KPIs
Climate change is integrated into supplier evaluation processes

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

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

Rationale for the coverage of your engagement
Our suppliers are enrolled in our engagement process. All suppliers can approach us on climate related issues. We actively engage all suppliers especially high-risk suppliers.

Impact of engagement, including measures of success
The suppliers are now more aware of our Sustainability Policy, Sustainability Certification Schemes as well as GHG calculation requirement and more active in engaging with us about the GHG calculation.

Comment

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 held 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

Explanation of how you encourage implementation
We are collecting their usage data, including fertilizer and pesticide usage. These data will be used to demonstrate that in order to achieve higher production rate, higher usage of both fertilizer and usage data is not necessary as long as good agricultural practices are implemented. The reduction in usage will directly result in lower direct cost, which would be favorable by our suppliers.

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 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
We provide our suppliers which volunteer to be RSPO certified with agricultural equipment.

Climate change related benefit
Emissions reductions (mitigation)

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

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) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?
Direct engagement with policy makers
Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support	We engaged with the Indonesian Government and Indonesian Sustainable Palm Oil GHG Working Group to develop GHG emission calculation tool and implement it on plantation level.	We support the continuation of this approach methodology for calculating GHG emission to contribute more to the environment.

C12.3b

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

C12.3c

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

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

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association's position
The trade associations are promoting sustainable palm oil.

How have you influenced, or are you attempting to influence their position?
We strive to promote sustainable practices and implementation to all stakeholders.

C12.3f

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

Musim Mas placed its staff in the working groups of RSPO to help shape the policy of RSPO. Periodic review is conducted to keep the engagement within our climate change strategy framework.

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
Sustainability Report 2018.pdf

Page/Section reference
Page 26-39, 'Promoting positive environmental impacts' section.

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

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 impart positive impact on the biodiversity of the area compared to area without HCV.

Have you implemented any response(s) to these impacts?
No

Description of the response(s)

Management practice reference number
MP2

Overall effect
Positive

Which of the following has been impacted?
Soil

Description of impact
The implementation of Integrated Pest Management (IPM) reduces usage of pesticides, which contributes to lower soil ecotoxicity.

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

Description of the response(s)

Management practice reference number
MP3

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. Reduced usage of fertilizer prevents excess runoff of nutrients to water bodies. Therefore, this would reduce eutrophication impact.

Have you implemented any response(s) to these impacts?
No

Description of the response(s)

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
The reduction in both fertilizers and pesticides would lower the eutrophication adn ecotoxicity impact.

Have any response to these impacts been implemented?
No

Description of the response(s)

C15. Signoff

C-FI

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

C15.1

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

	Job title	Corresponding job category
Row 1	Director of Sustainability	Other, please specify (Head of Department)

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 be informed that you can go into 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	

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?
No

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).

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 striving to allocating emissions to different customers.

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?
No

SC3.1

(SC3.1) Do you want to enroll in the 2020-2021 CDP Action Exchange initiative?
No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2019-2020 Action Exchange initiative?
No

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 am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Investors Customers	Public	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms